FIG.1

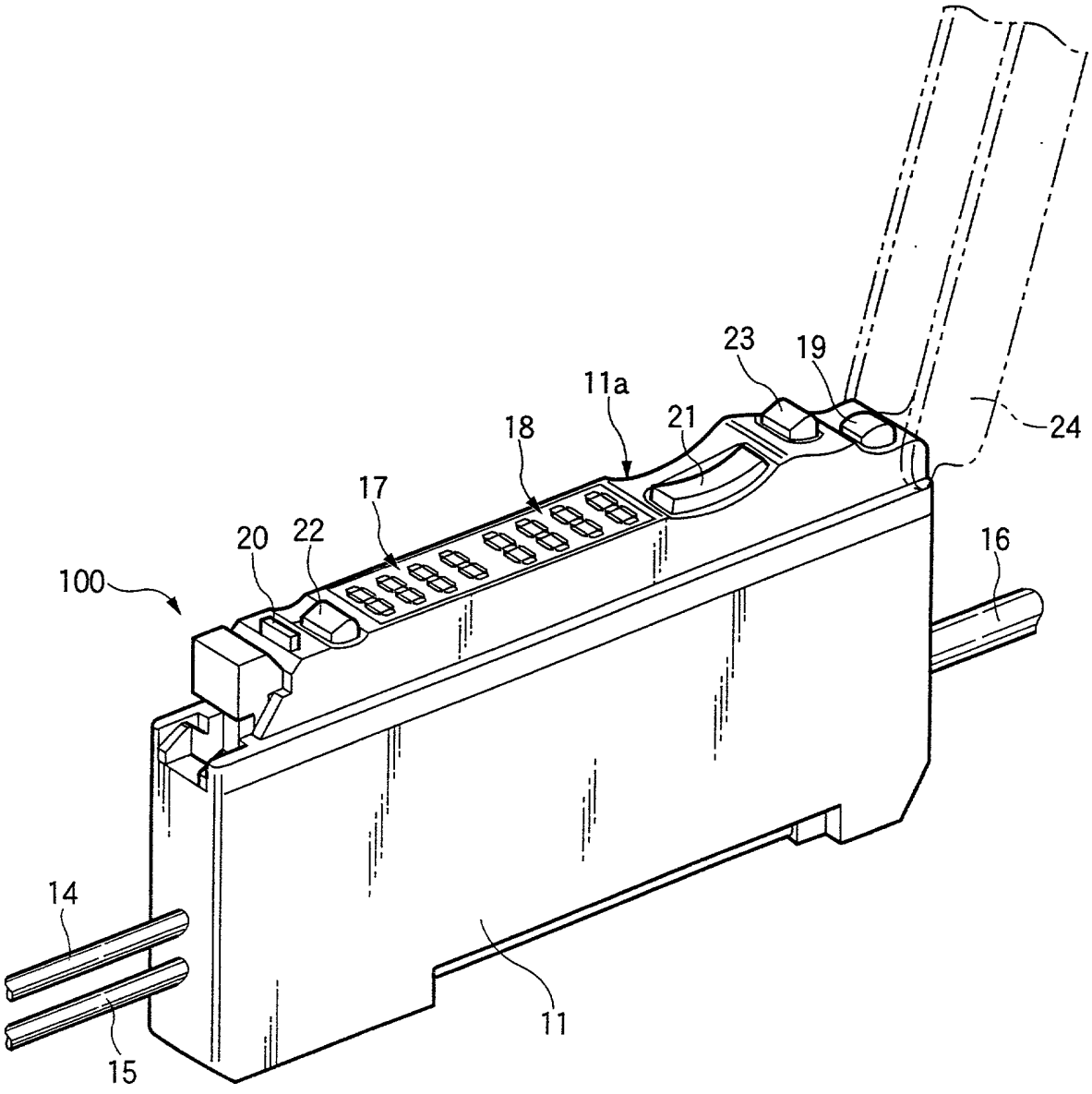

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FIG.2

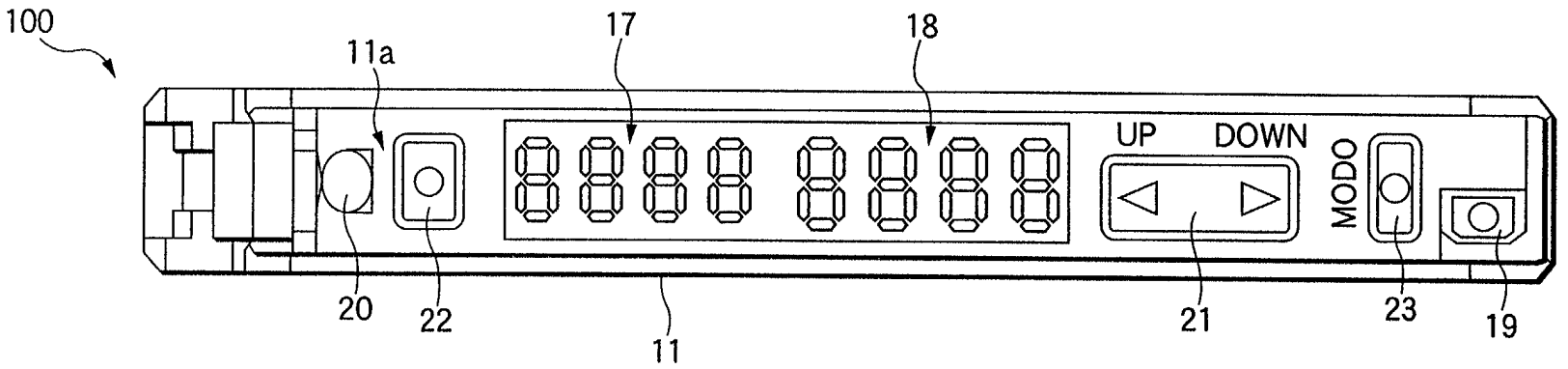

FIG.3

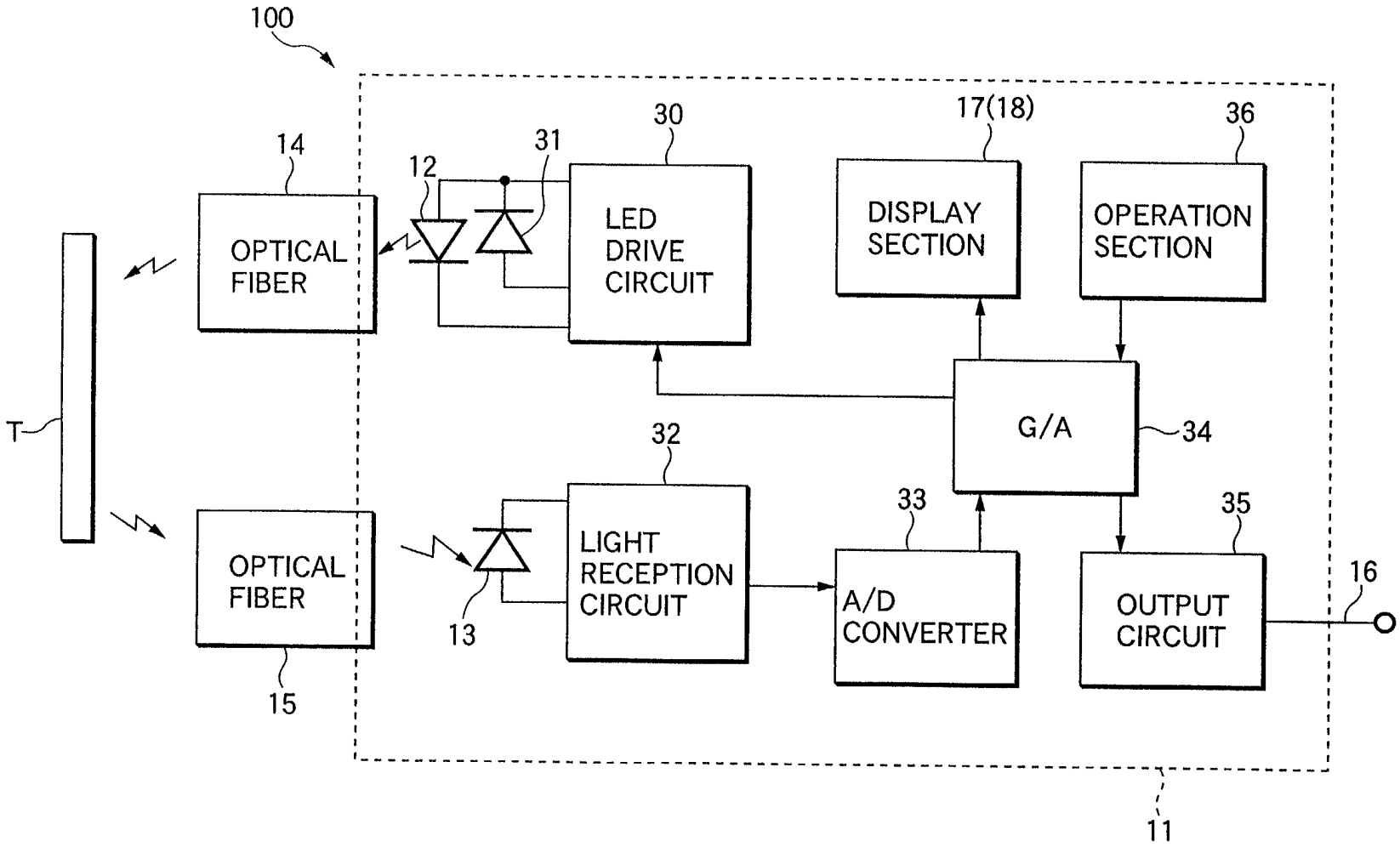
100
14
OPTICAL FIBER
12
31
30
LED DRIVE CIRCUIT
17(18)
DISPLAY SECTION
36
OPERATION SECTION
T
G/A
34
32
33
35
OPTICAL FIBER
LIGHT RECEPTION CIRCUIT
A/D CONVERTER
OUTPUT CIRCUIT
16
13
15
11

FIG.4

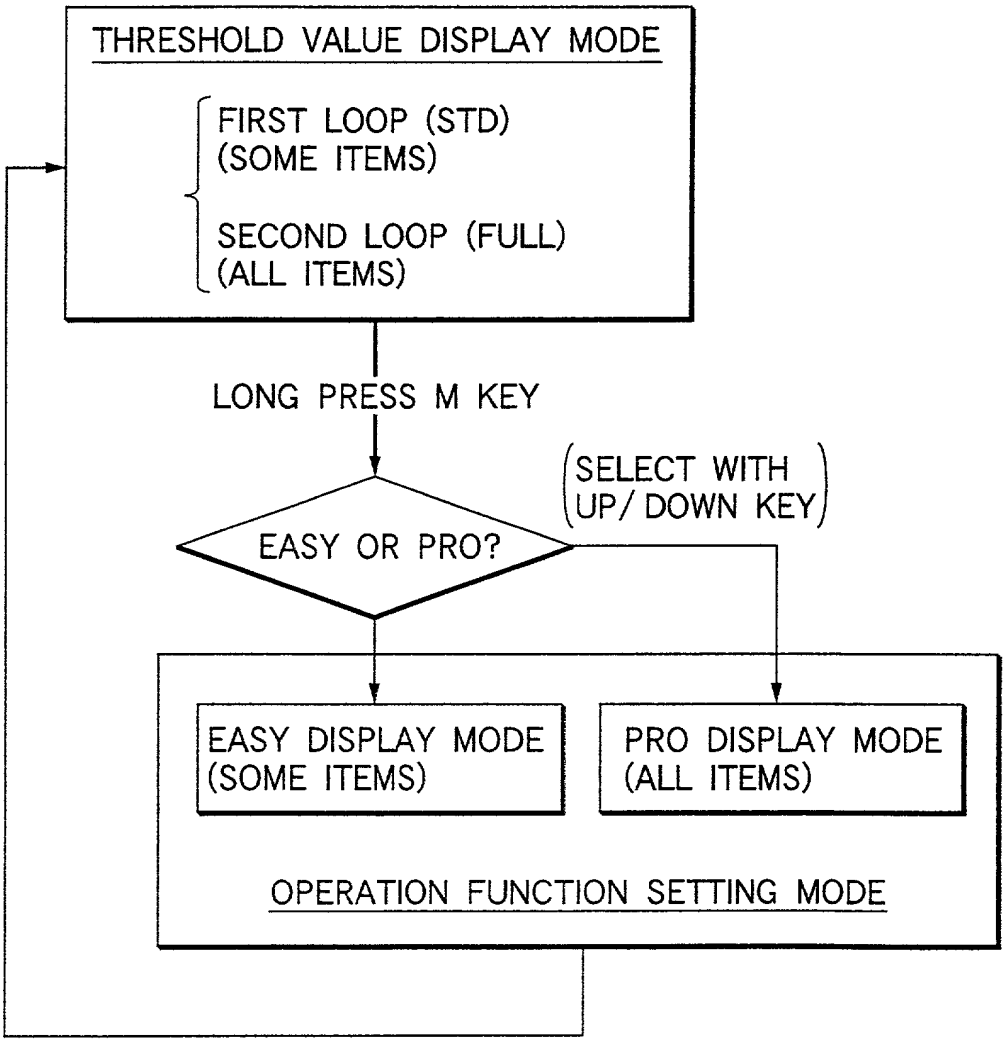

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FIG.5

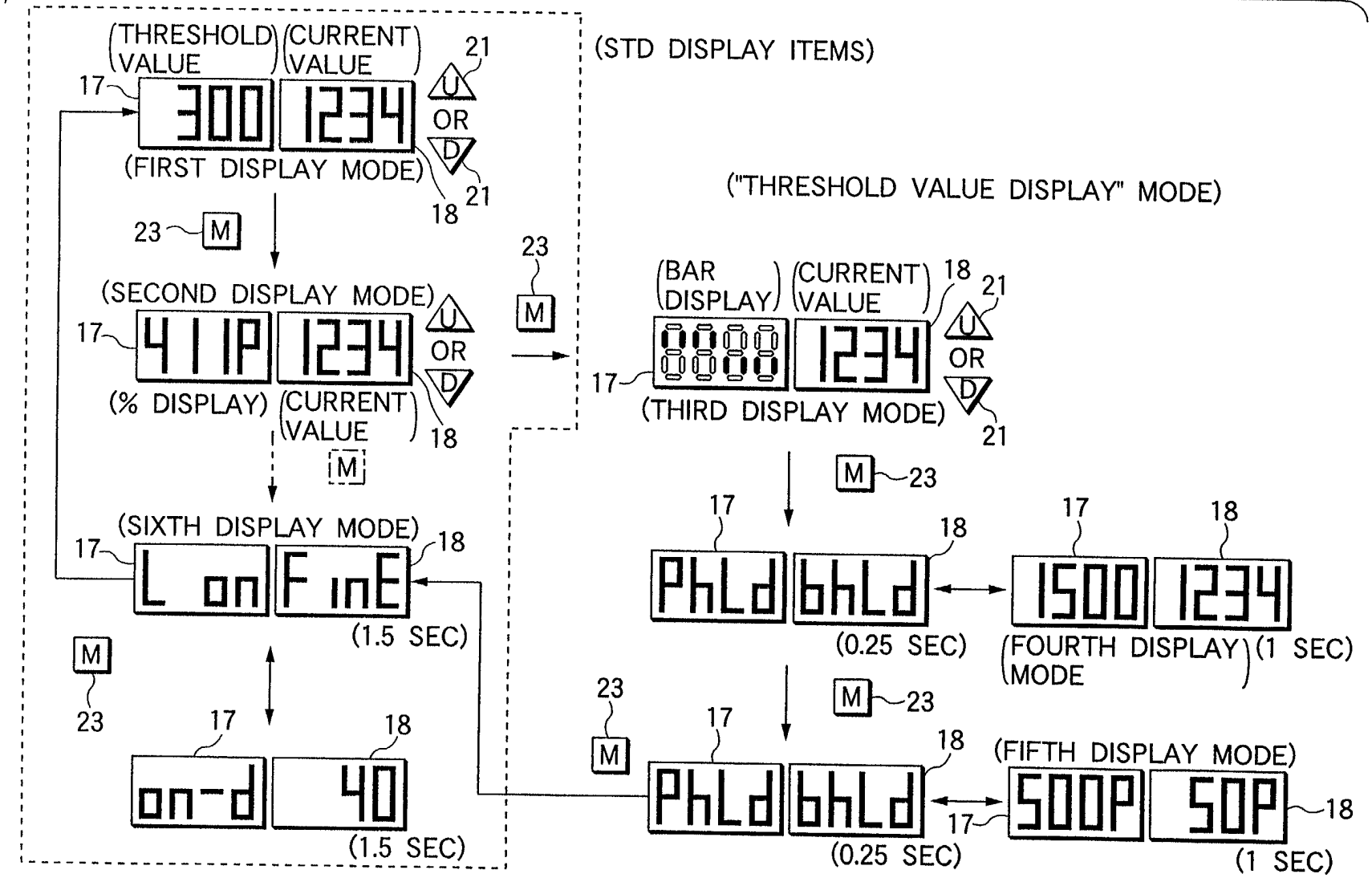

FIG.6

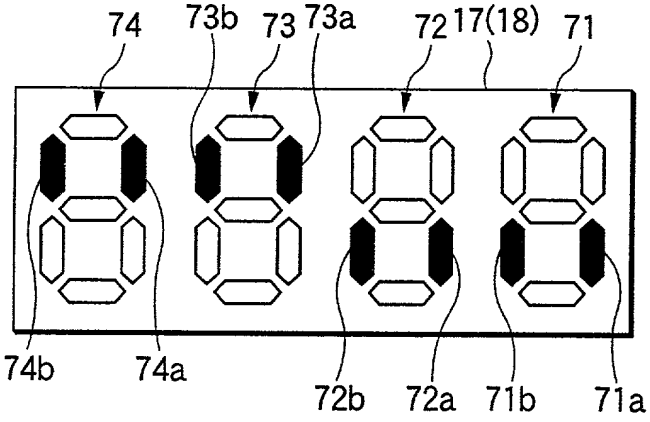

FIG.7

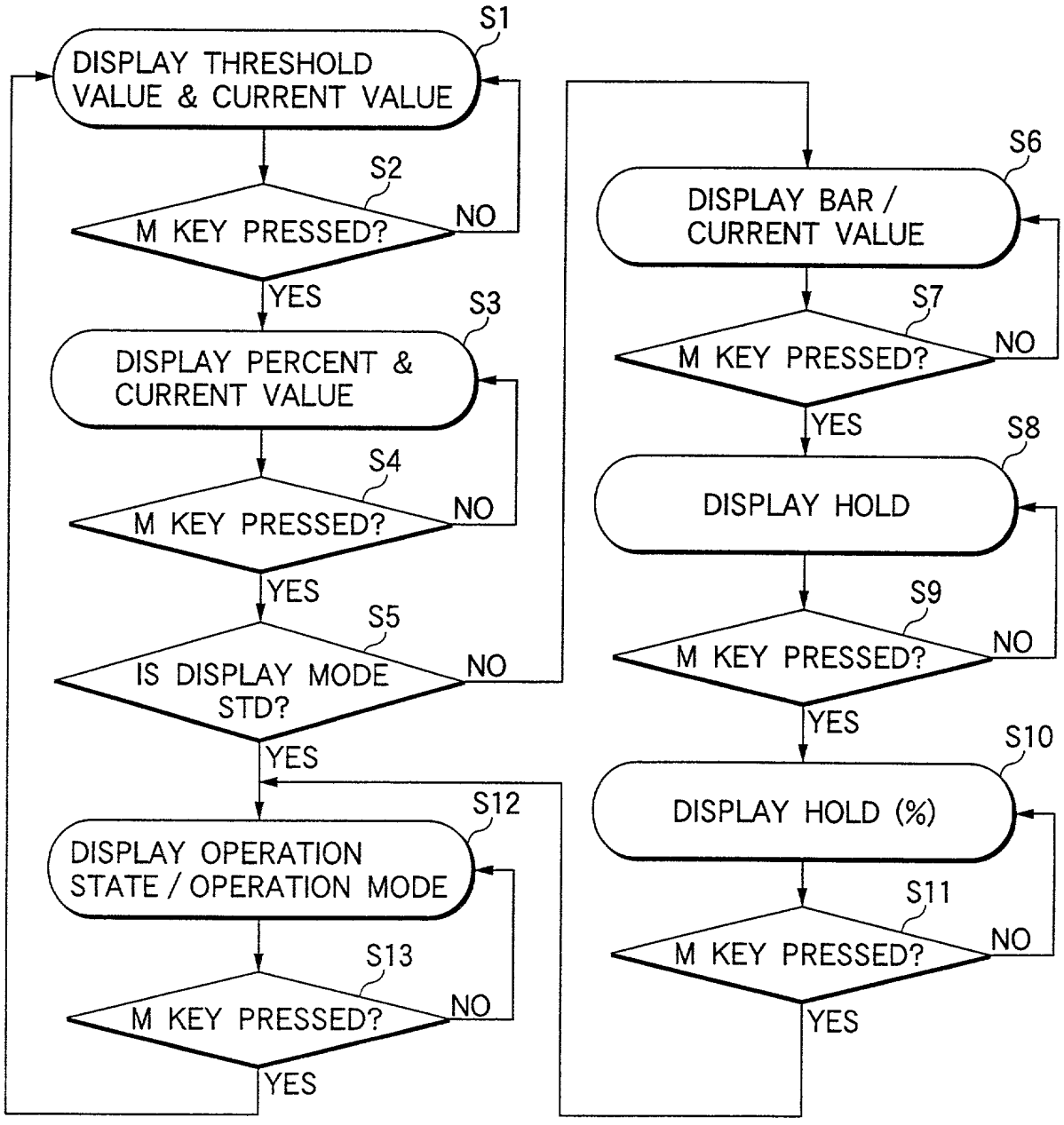
(THRESHOLD VALUE DISPLAY)
S1
DISPLAY THRESHOLD VALUE & CURRENT VALUE
S2
M KEY PRESSED?
NO
YES
S3
DISPLAY PERCENT & CURRENT VALUE
S4
M KEY PRESSED?
NO
YES
S5
IS DISPLAY MODE STD?
NO
YES
S12
DISPLAY OPERATION STATE / OPERATION MODE
S13
M KEY PRESSED?
NO
YES
S6
DISPLAY BAR / CURRENT VALUE
S7
M KEY PRESSED?
NO
YES
S8
DISPLAY HOLD
S9
M KEY PRESSED?
NO
YES
S10
DISPLAY HOLD (%)
S11
M KEY PRESSED?
NO
YES

FIG.8

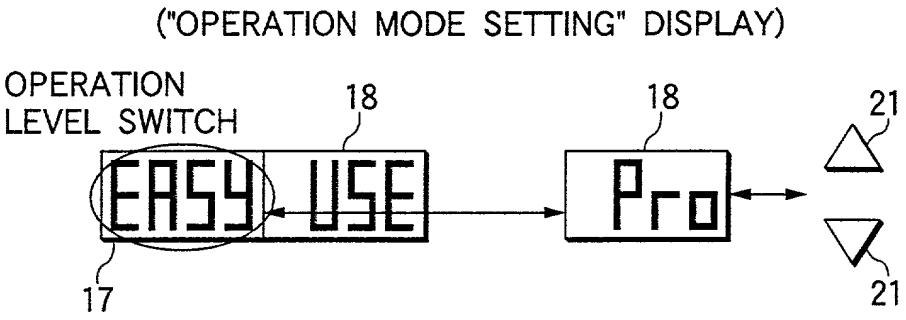
("OPERATION MODE SETTING" DISPLAY)
OPERATION
LEVEL SWITCH
18
18
21
EASY USE
Pro
17
21

FIG.9

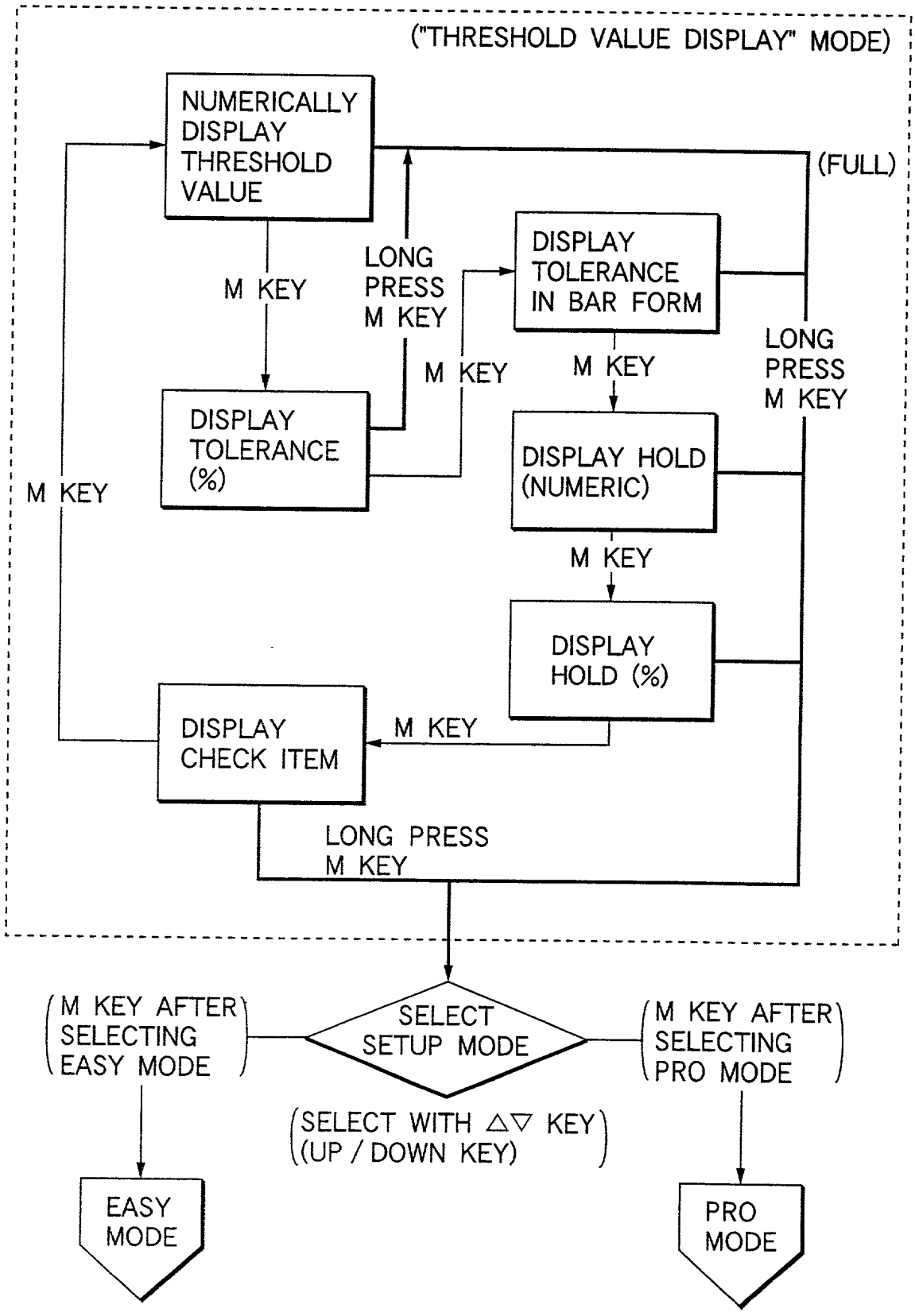
("THRESHOLD VALUE DISPLAY" MODE)
NUMERICALLY DISPLAY THRESHOLD VALUE
(FULL)
M KEY
LONG PRESS M KEY
DISPLAY TOLERANCE IN BAR FORM
LONG PRESS M KEY
M KEY
M KEY
DISPLAY TOLERANCE (%)
DISPLAY HOLD (NUMERIC)
M KEY
M KEY
DISPLAY HOLD (%)
DISPLAY CHECK ITEM
M KEY
LONG PRESS M KEY
(M KEY AFTER SELECTING EASY MODE)
SELECT SETUP MODE
(M KEY AFTER SELECTING PRO MODE)
(SELECT WITH △▽ KEY (UP / DOWN KEY))
EASY MODE
PRO MODE

FIG.10

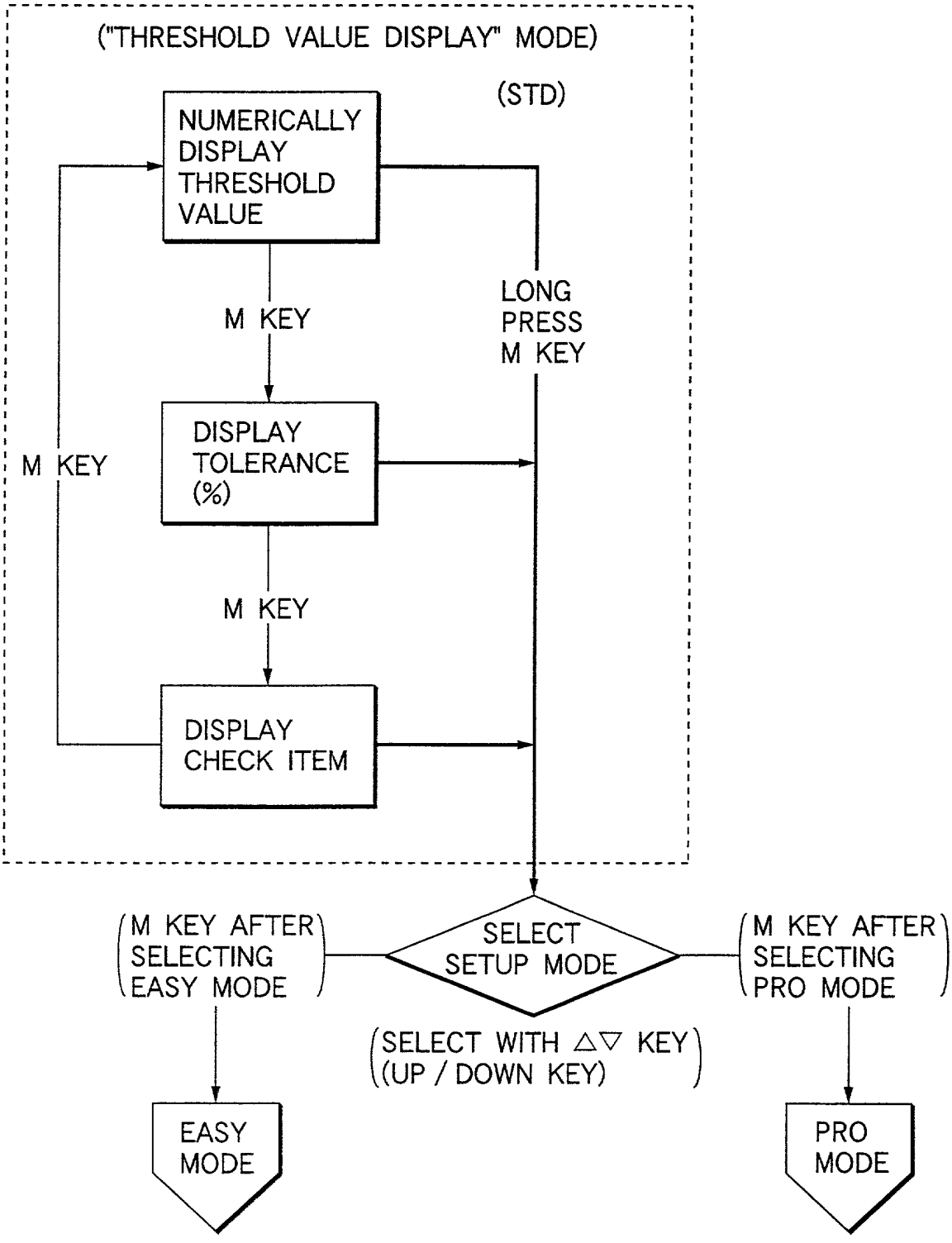
("THRESHOLD VALUE DISPLAY" MODE)
(STD)
NUMERICALLY DISPLAY THRESHOLD VALUE
M KEY
LONG PRESS M KEY
DISPLAY TOLERANCE (%)
M KEY
M KEY
DISPLAY CHECK ITEM
(M KEY AFTER SELECTING EASY MODE)
SELECT SETUP MODE
(M KEY AFTER SELECTING PRO MODE)
(SELECT WITH △▽ KEY (UP / DOWN KEY))
EASY MODE
PRO MODE

FIG.11

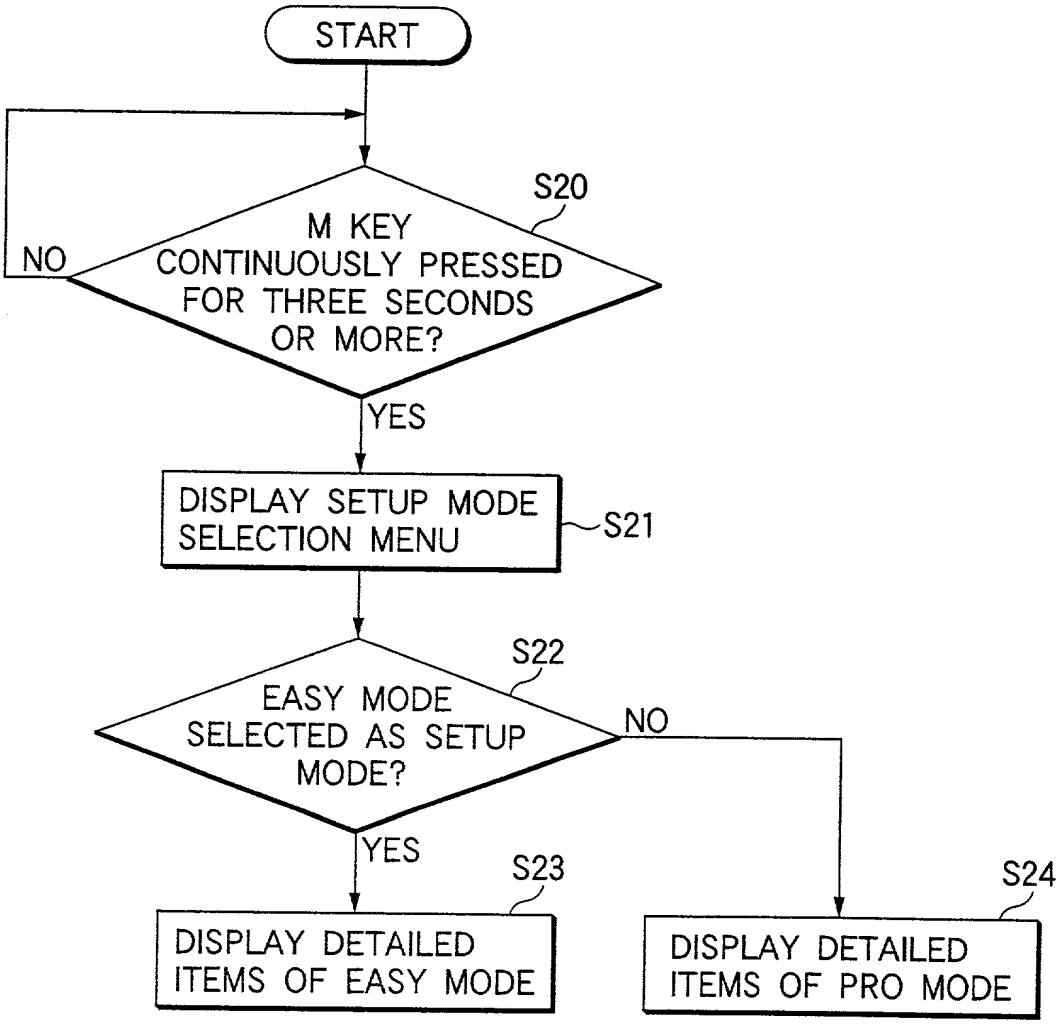
START
S20
M KEY CONTINUOUSLY PRESSED FOR THREE SECONDS OR MORE?
NO
YES
DISPLAY SETUP MODE SELECTION MENU
S21
S22
EASY MODE SELECTED AS SETUP MODE?
NO
YES
S23
DISPLAY DETAILED ITEMS OF EASY MODE
S24
DISPLAY DETAILED ITEMS OF PRO MODE

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FIG.12

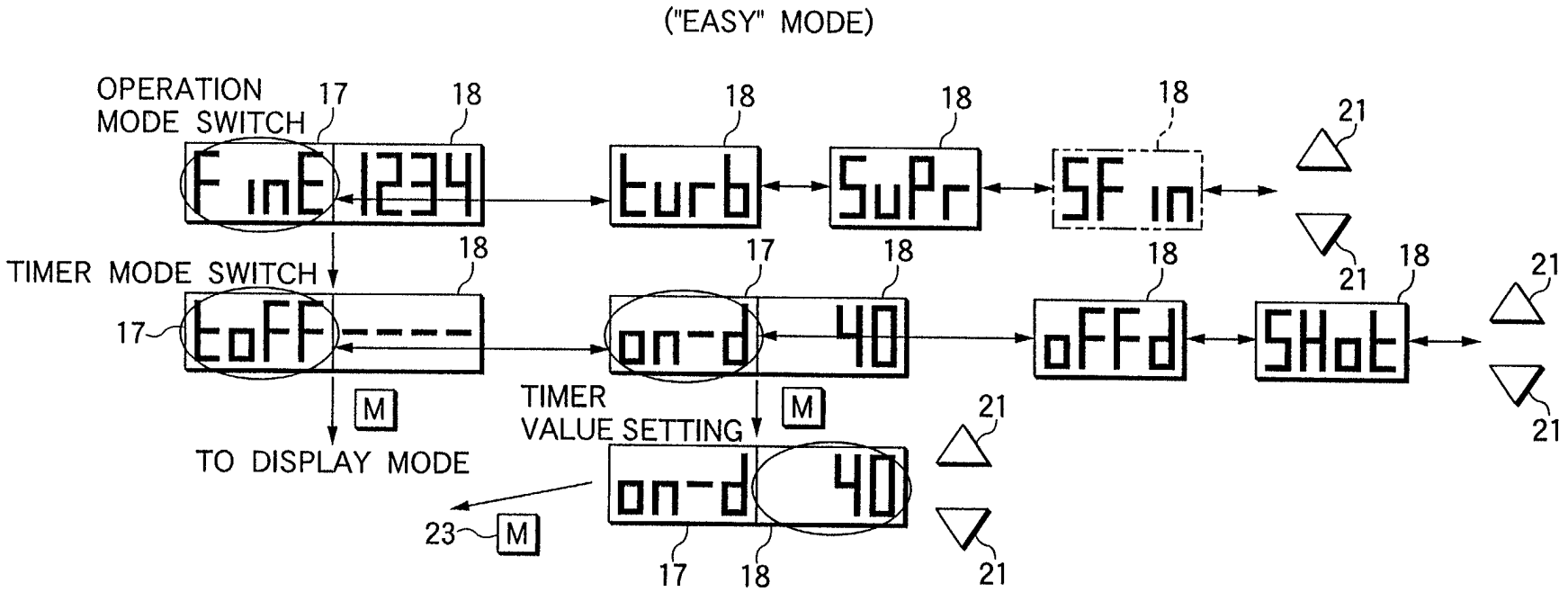

FIG.13

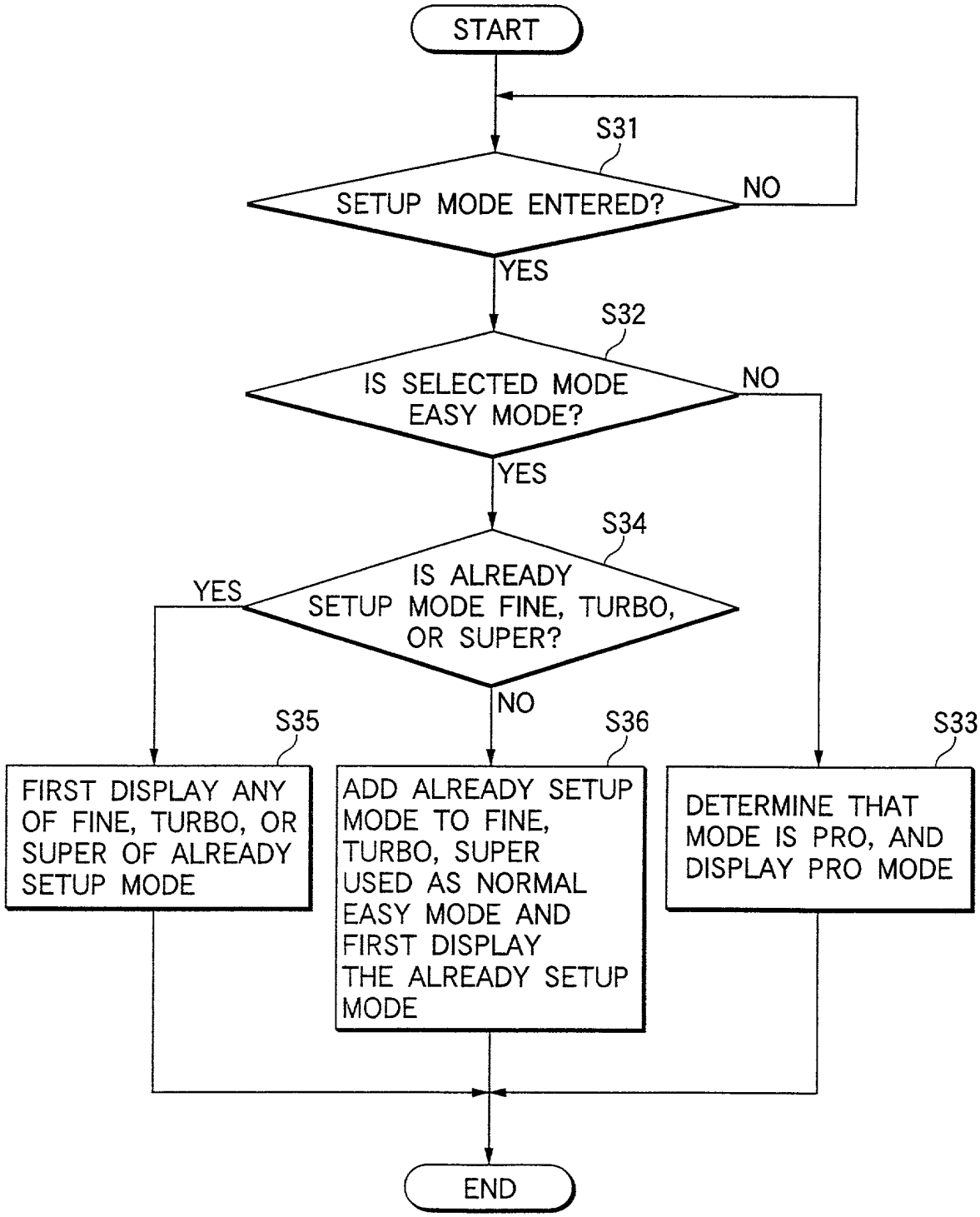
START
S31
SETUP MODE ENTERED?
NO
YES
S32
IS SELECTED MODE EASY MODE?
NO
YES
S34
IS ALREADY SETUP MODE FINE, TURBO, OR SUPER?
YES
NO
S35
FIRST DISPLAY ANY OF FINE, TURBO, OR SUPER OF ALREADY SETUP MODE
S36
ADD ALREADY SETUP MODE TO FINE, TURBO, SUPER USED AS NORMAL EASY MODE AND FIRST DISPLAY THE ALREADY SETUP MODE
S33
DETERMINE THAT MODE IS PRO, AND DISPLAY PRO MODE
END

FIG.14

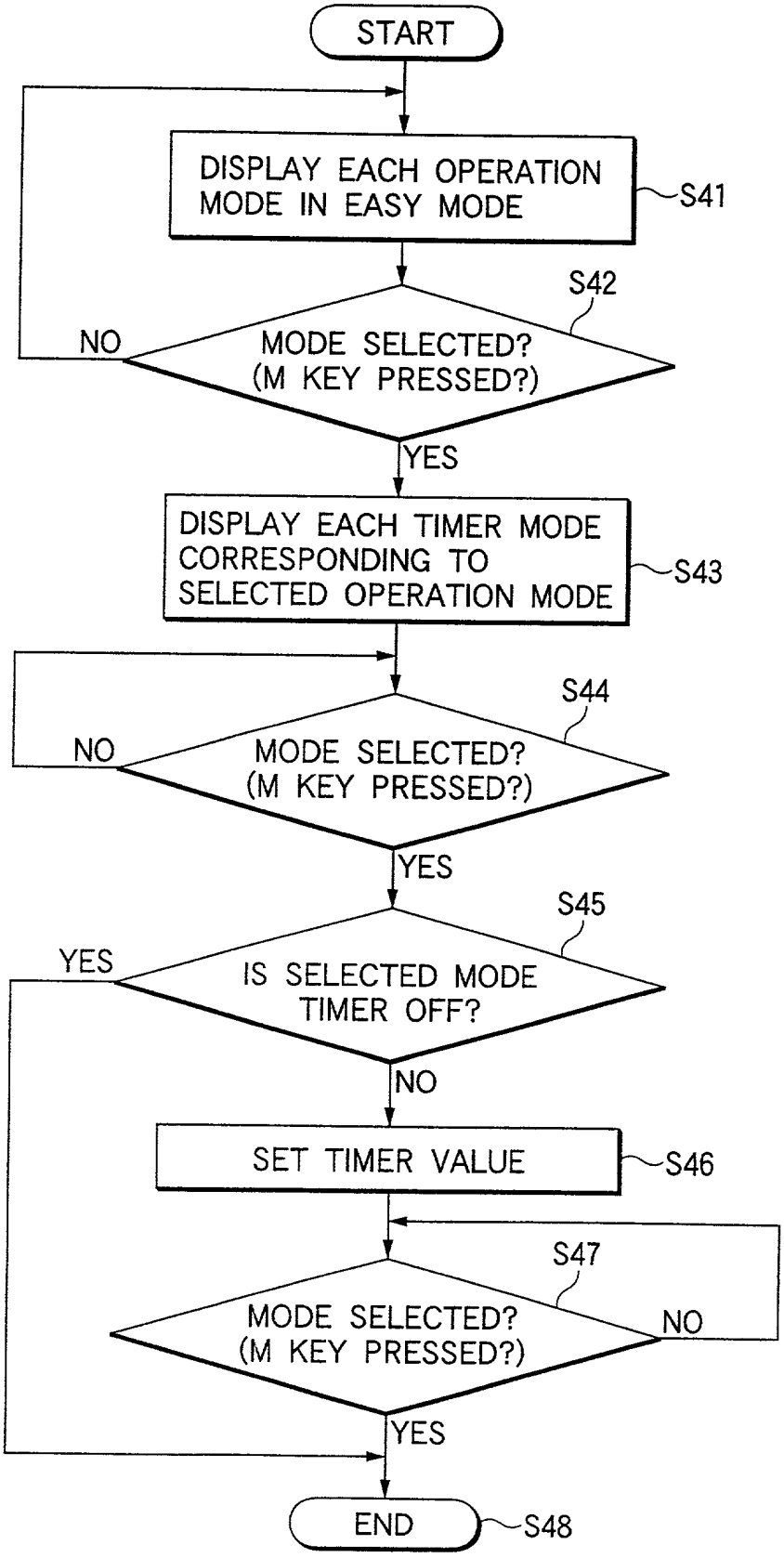
START
DISPLAY EACH OPERATION MODE IN EASY MODE
S41
S42
NO
MODE SELECTED? (M KEY PRESSED?)
YES
DISPLAY EACH TIMER MODE CORRESPONDING TO SELECTED OPERATION MODE
S43
S44
NO
MODE SELECTED? (M KEY PRESSED?)
YES
S45
YES
IS SELECTED MODE TIMER OFF?
NO
SET TIMER VALUE
S46
S47
MODE SELECTED? (M KEY PRESSED?)
NO
YES
END
S48

FIG.15

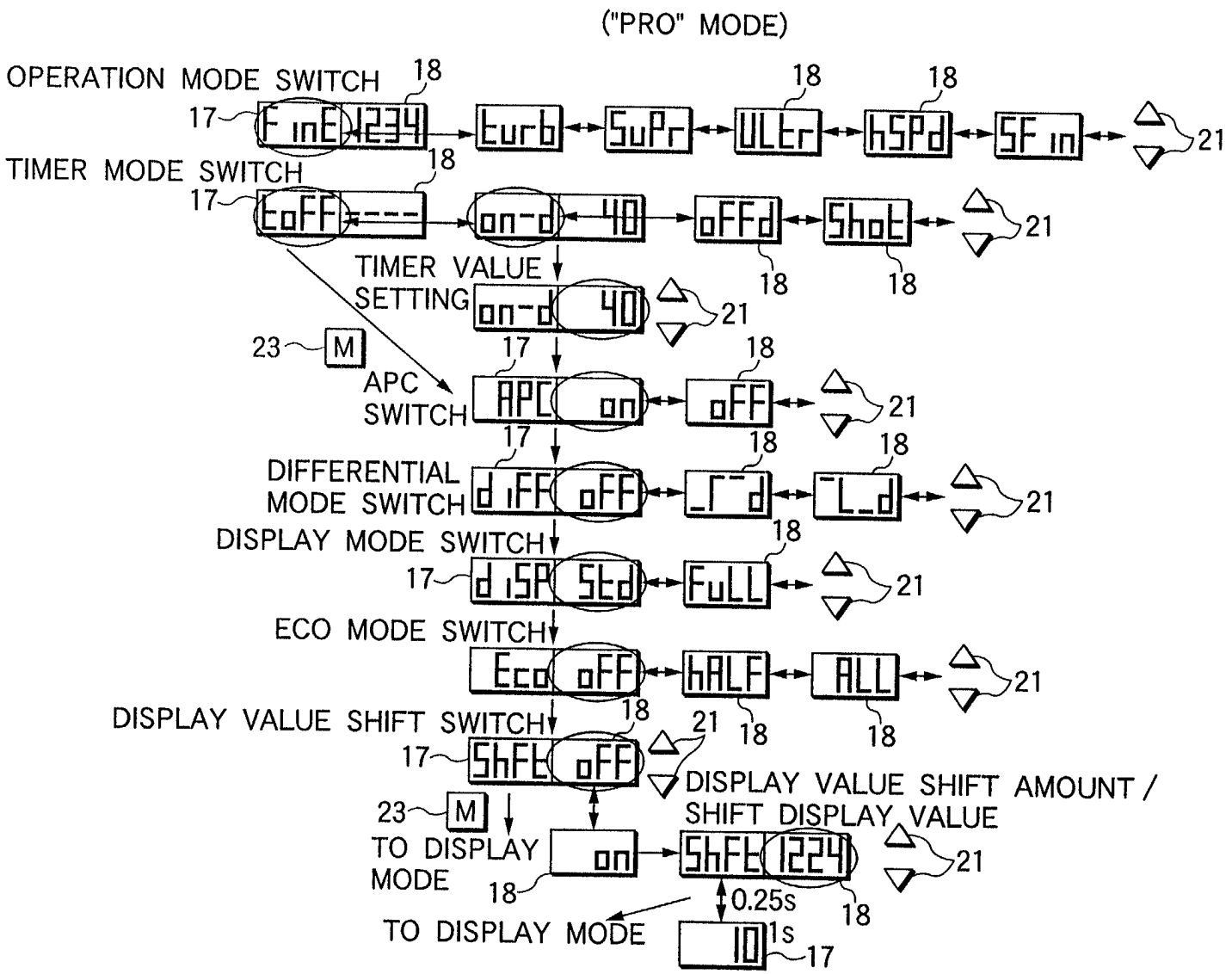
("PRO" MODE)
OPERATION MODE SWITCH
TIMER MODE SWITCH
TIMER VALUE SETTING
APC SWITCH
DIFFERENTIAL MODE SWITCH
DISPLAY MODE SWITCH
ECO MODE SWITCH
DISPLAY VALUE SHIFT SWITCH
TO DISPLAY MODE
TO DISPLAY MODE
DISPLAY VALUE SHIFT AMOUNT / SHIFT DISPLAY VALUE
0.25s
1s
17
18
21
23
M

FIG.16

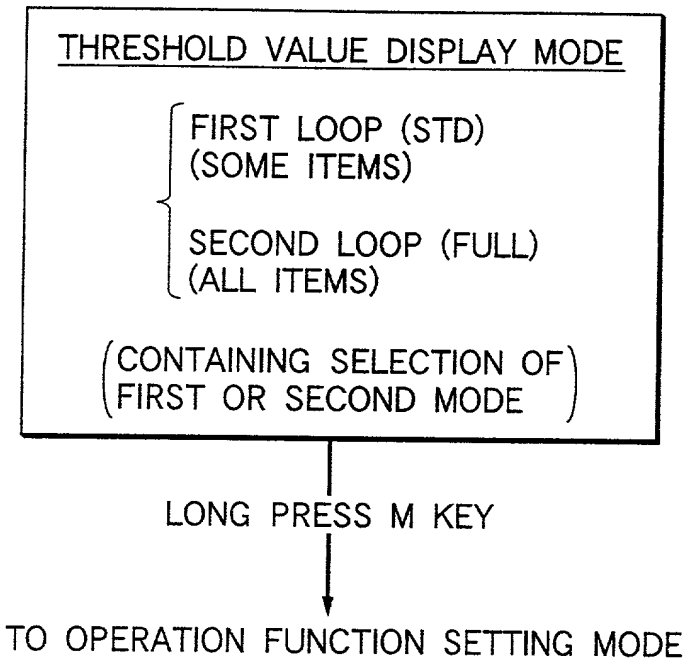
THRESHOLD VALUE DISPLAY MODE
FIRST LOOP (STD)
(SOME ITEMS)
SECOND LOOP (FULL)
(ALL ITEMS)
(CONTAINING SELECTION OF
FIRST OR SECOND MODE)
LONG PRESS M KEY
TO OPERATION FUNCTION SETTING MODE

FIG.17

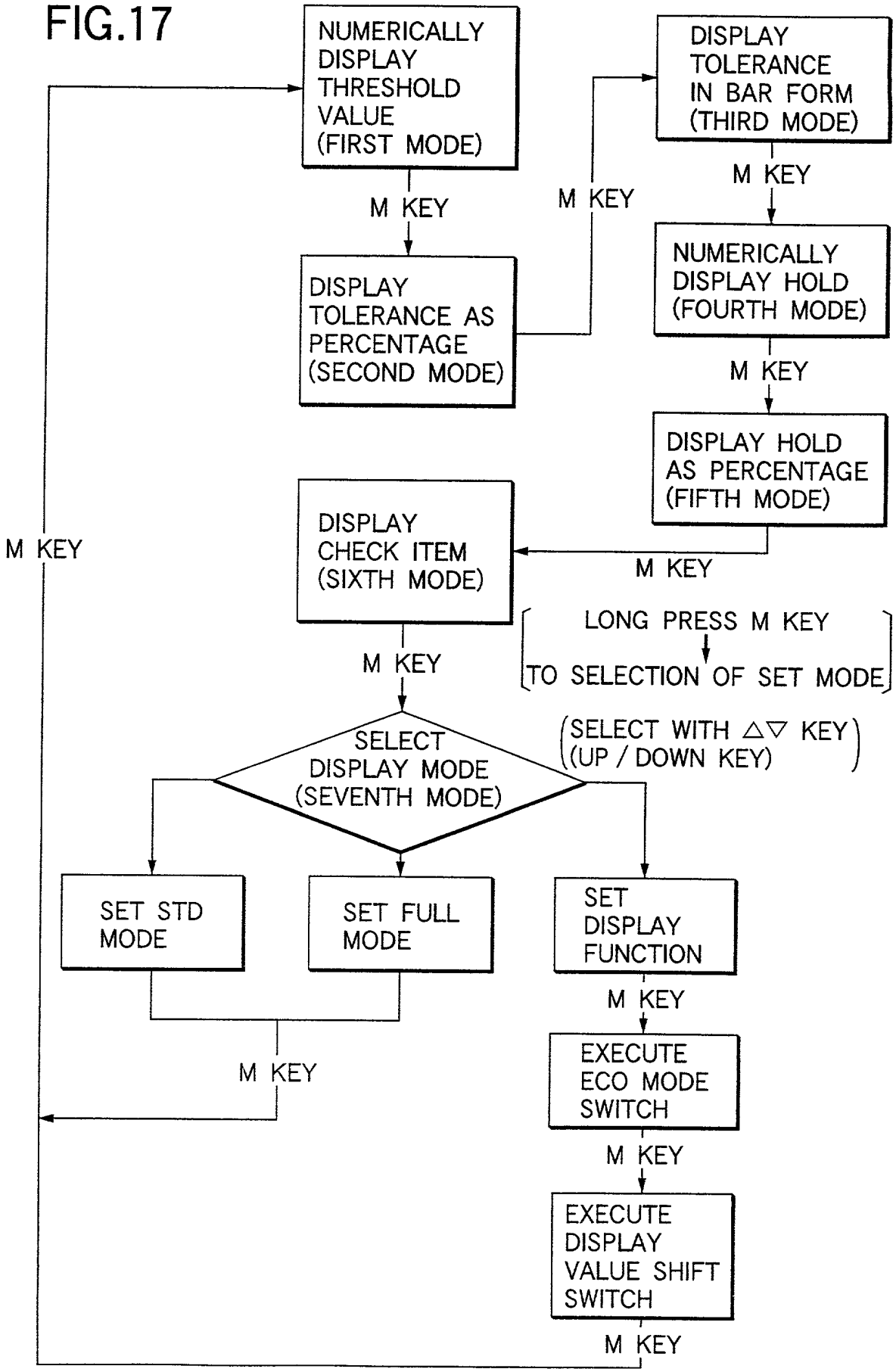
NUMERICALLY DISPLAY THRESHOLD VALUE (FIRST MODE)
M KEY
DISPLAY TOLERANCE AS PERCENTAGE (SECOND MODE)
M KEY
DISPLAY TOLERANCE IN BAR FORM (THIRD MODE)
M KEY
NUMERICALLY DISPLAY HOLD (FOURTH MODE)
M KEY
DISPLAY HOLD AS PERCENTAGE (FIFTH MODE)
M KEY
DISPLAY CHECK ITEM (SIXTH MODE)
M KEY
M KEY
LONG PRESS M KEY
TO SELECTION OF SET MODE
SELECT DISPLAY MODE (SEVENTH MODE)
(SELECT WITH △▽ KEY (UP / DOWN KEY))
SET STD MODE
SET FULL MODE
SET DISPLAY FUNCTION
M KEY
EXECUTE ECO MODE SWITCH
M KEY
EXECUTE DISPLAY VALUE SHIFT SWITCH
M KEY

FIG.18

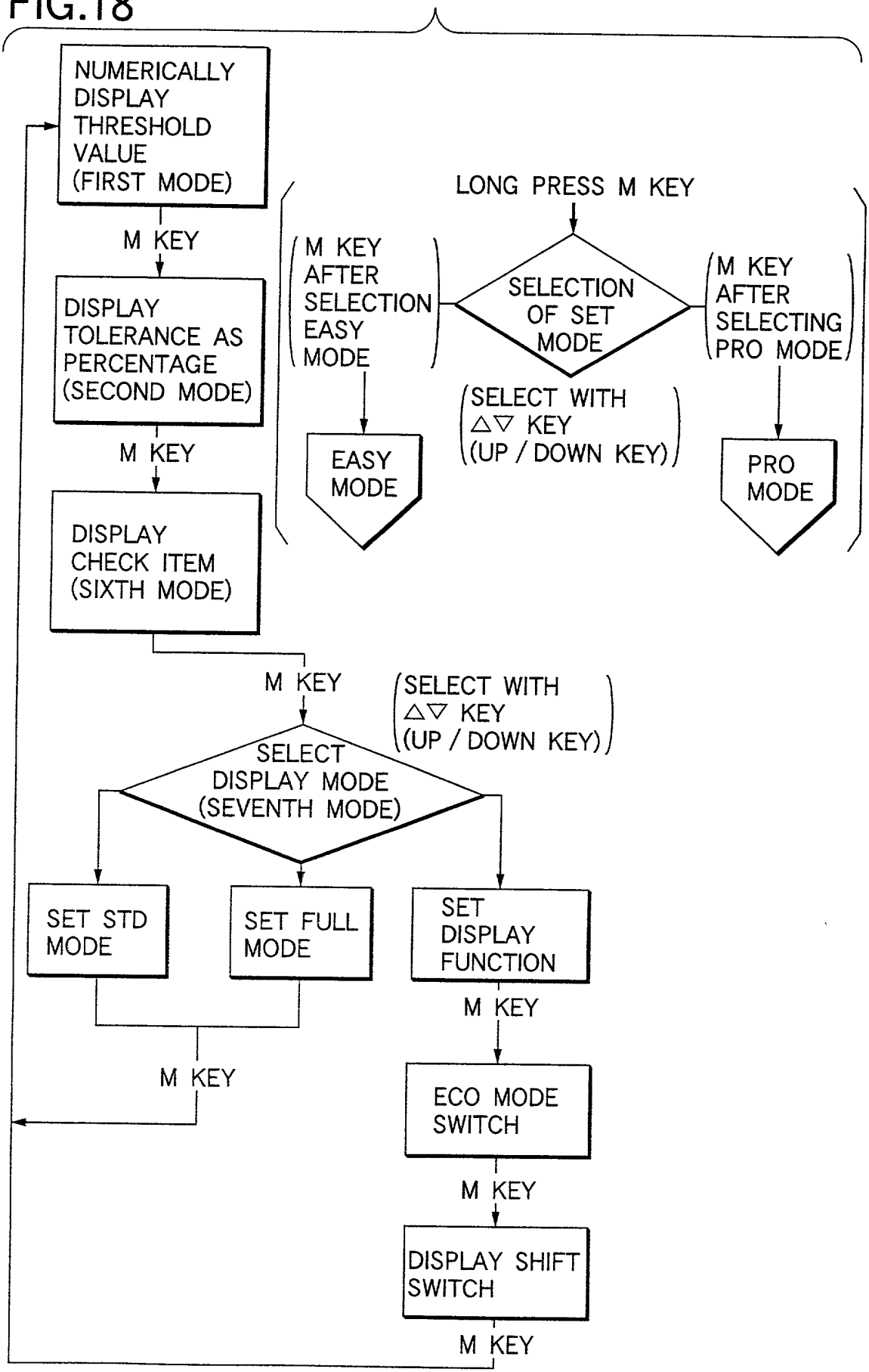
NUMERICALLY DISPLAY THRESHOLD VALUE (FIRST MODE)
M KEY
DISPLAY TOLERANCE AS PERCENTAGE (SECOND MODE)
M KEY
DISPLAY CHECK ITEM (SIXTH MODE)
M KEY
SELECT WITH △▽ KEY (UP / DOWN KEY)
SELECT DISPLAY MODE (SEVENTH MODE)
SET STD MODE
SET FULL MODE
SET DISPLAY FUNCTION
M KEY
M KEY
ECO MODE SWITCH
M KEY
DISPLAY SHIFT SWITCH
M KEY
LONG PRESS M KEY
M KEY AFTER SELECTION EASY MODE
SELECTION OF SET MODE
M KEY AFTER SELECTING PRO MODE
SELECT WITH △▽ KEY (UP / DOWN KEY)
EASY MODE
PRO MODE

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FIG.19

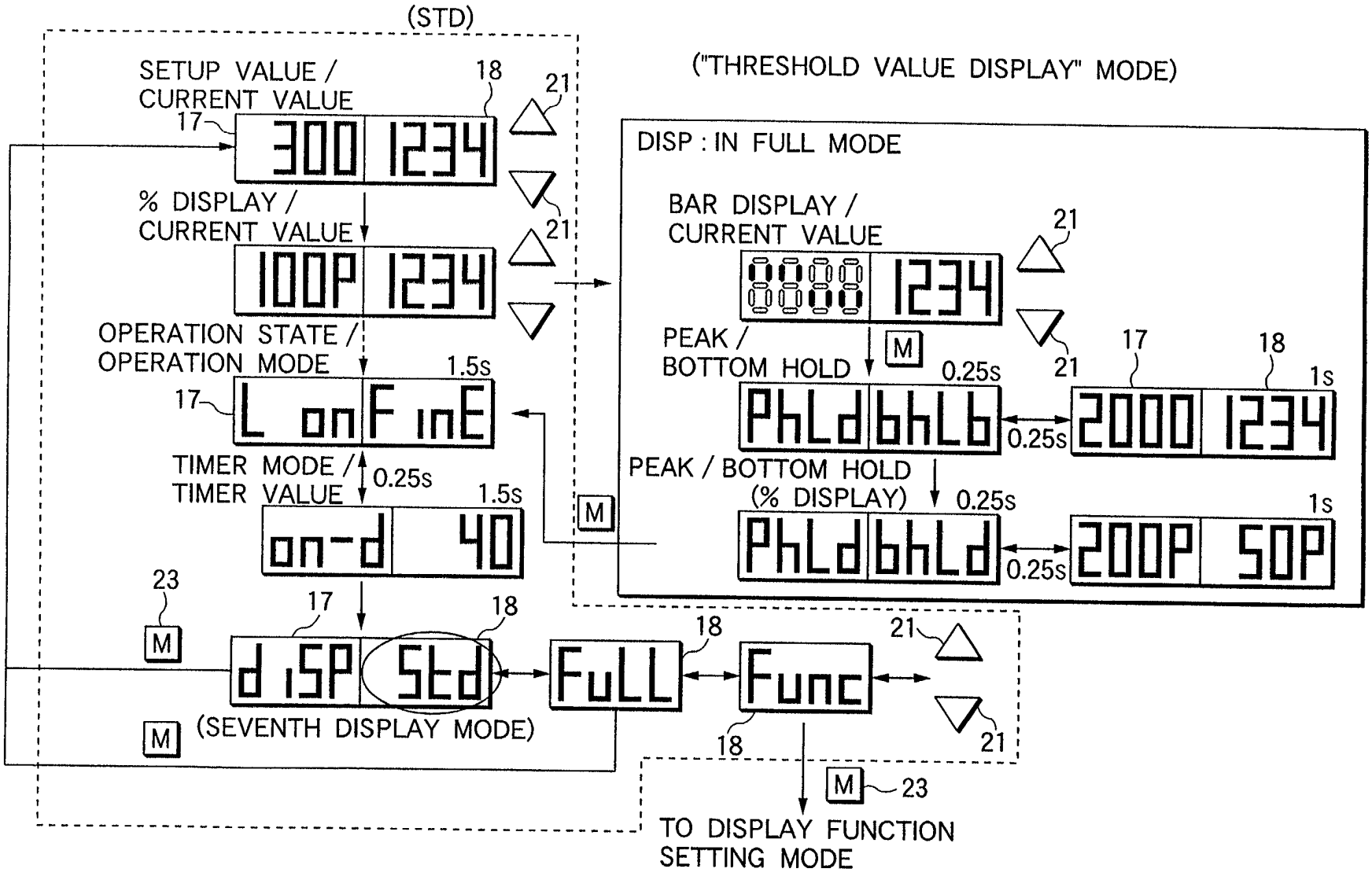

FIG.20

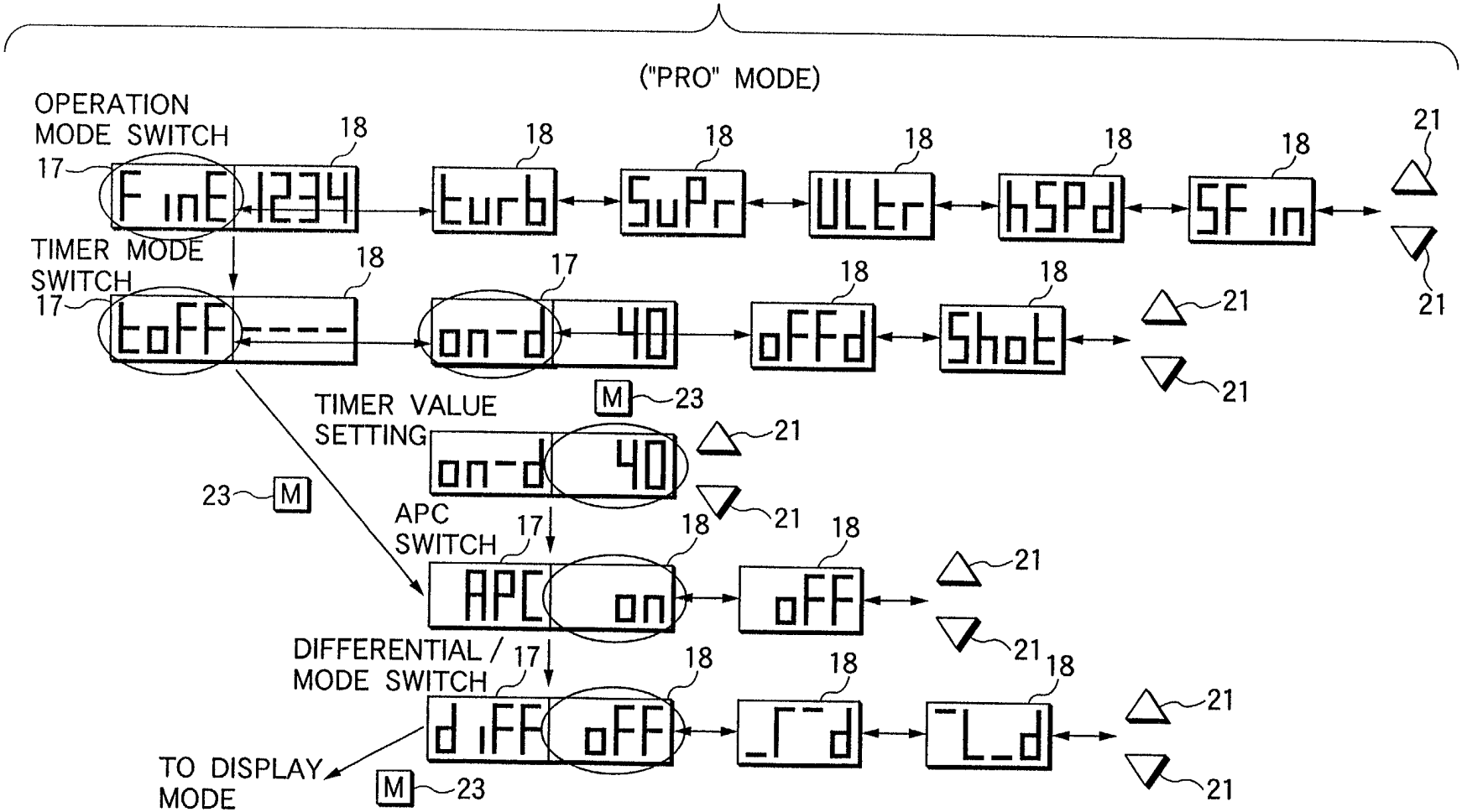
("PRO" MODE)
OPERATION MODE SWITCH
17
18
F inE
1234
tur b
SuPr
ULtr
hSPd
SF in
21
TIMER MODE SWITCH
17
toFF
----
on-d
40
oFFd
ShoE
TIMER VALUE SETTING
M
23
APC SWITCH
17
APC
on
oFF
DIFFERENTIAL / MODE SWITCH
d iFF
oFF
TO DISPLAY MODE

FIG.21

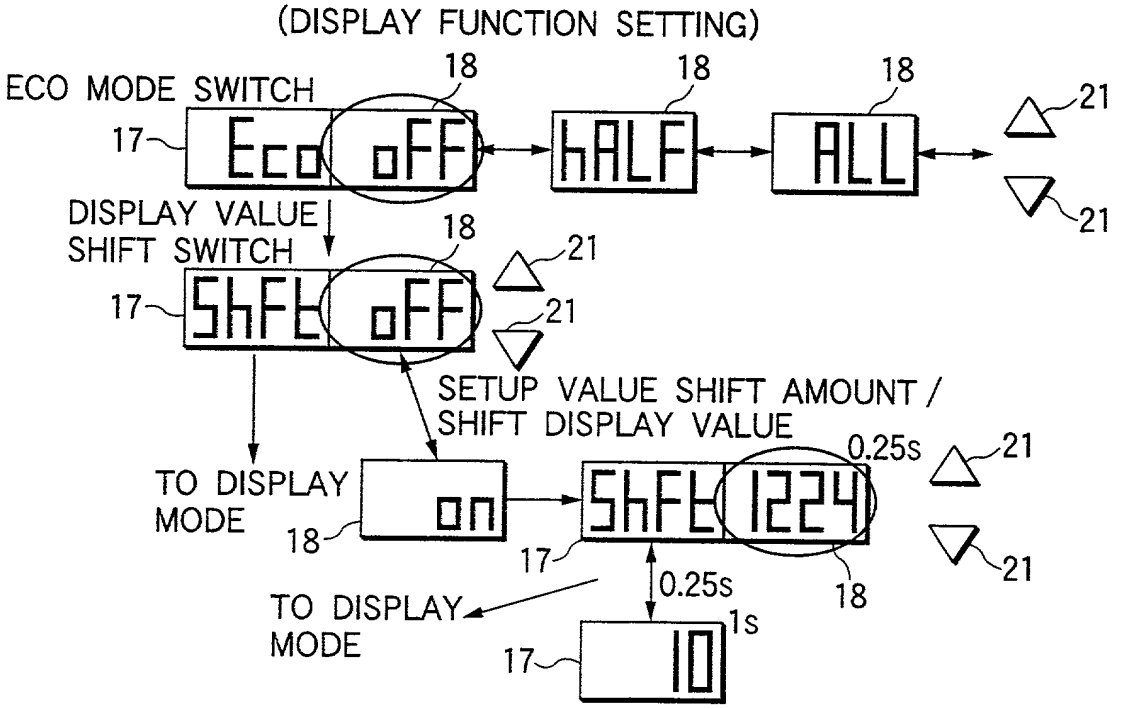
(DISPLAY FUNCTION SETTING)
ECO MODE SWITCH
17
18
Eco
oFF
18
hALF
18
ALL
21
21
DISPLAY VALUE SHIFT SWITCH
17
18
ShFt
oFF
21
21
SETUP VALUE SHIFT AMOUNT / SHIFT DISPLAY VALUE
TO DISPLAY MODE
18
on
17
ShFt
1224
0.25s
18
21
21
0.25s
TO DISPLAY MODE
17
10
1s

FIG.22

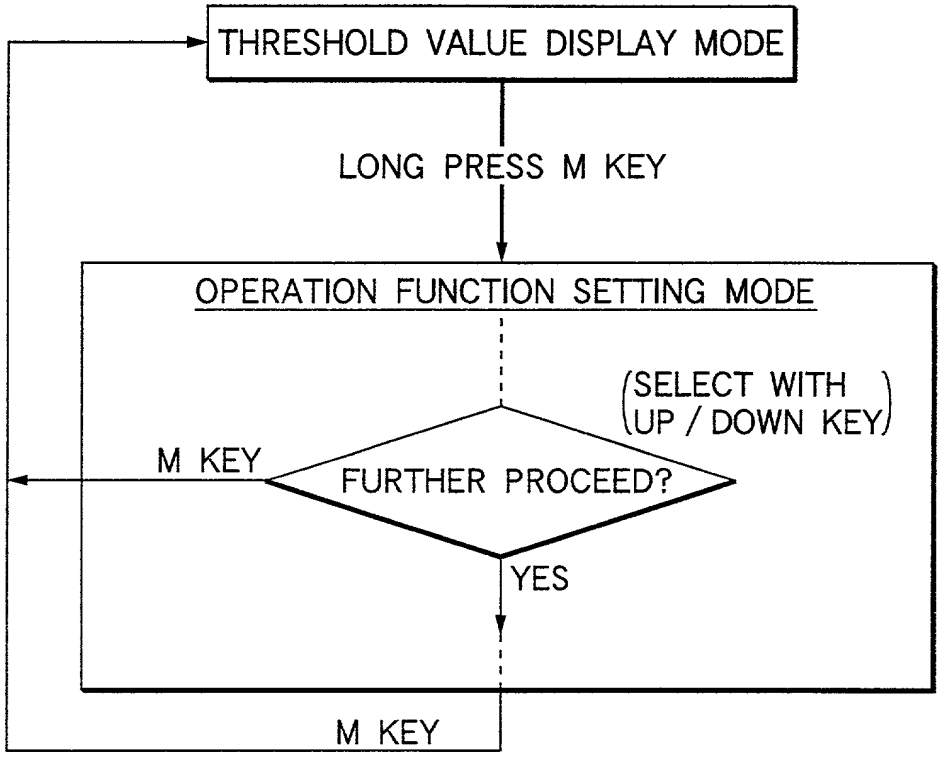
THRESHOLD VALUE DISPLAY MODE
LONG PRESS M KEY
OPERATION FUNCTION SETTING MODE
(SELECT WITH UP / DOWN KEY)
M KEY
FURTHER PROCEED?
YES
M KEY

FIG.23

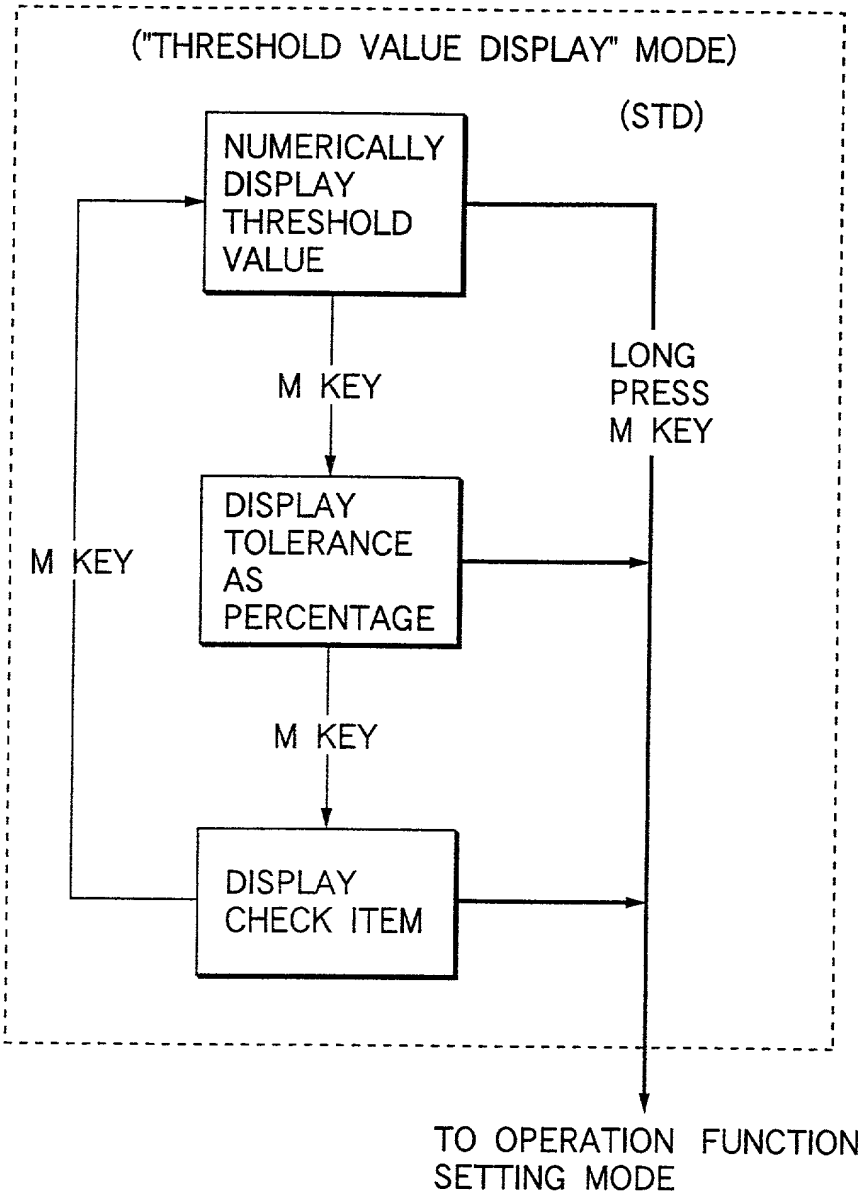
("THRESHOLD VALUE DISPLAY" MODE)
(STD)
NUMERICALLY DISPLAY THRESHOLD VALUE
M KEY
LONG PRESS M KEY
DISPLAY TOLERANCE AS PERCENTAGE
M KEY
M KEY
DISPLAY CHECK ITEM
TO OPERATION FUNCTION SETTING MODE

FIG.24

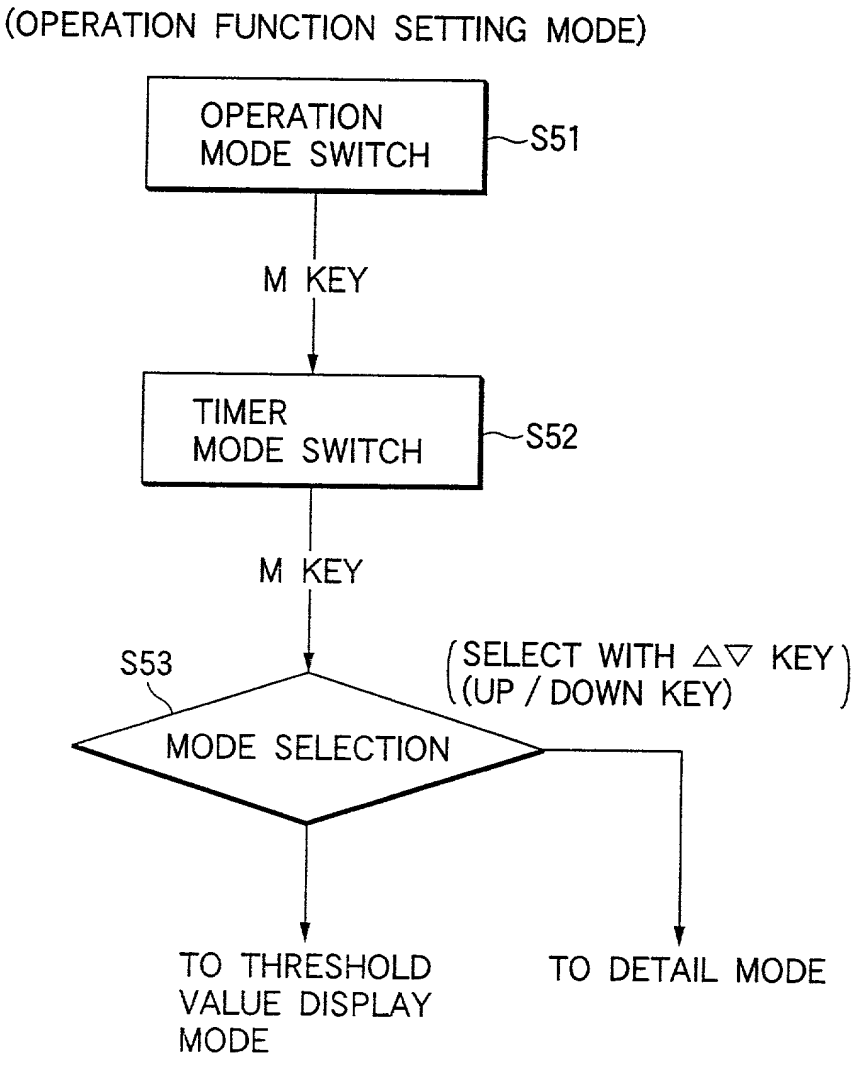
(OPERATION FUNCTION SETTING MODE)
OPERATION MODE SWITCH
S51
M KEY
TIMER MODE SWITCH
S52
M KEY
S53
(SELECT WITH △▽ KEY (UP / DOWN KEY))
MODE SELECTION
TO THRESHOLD VALUE DISPLAY MODE
TO DETAIL MODE

FIG.25

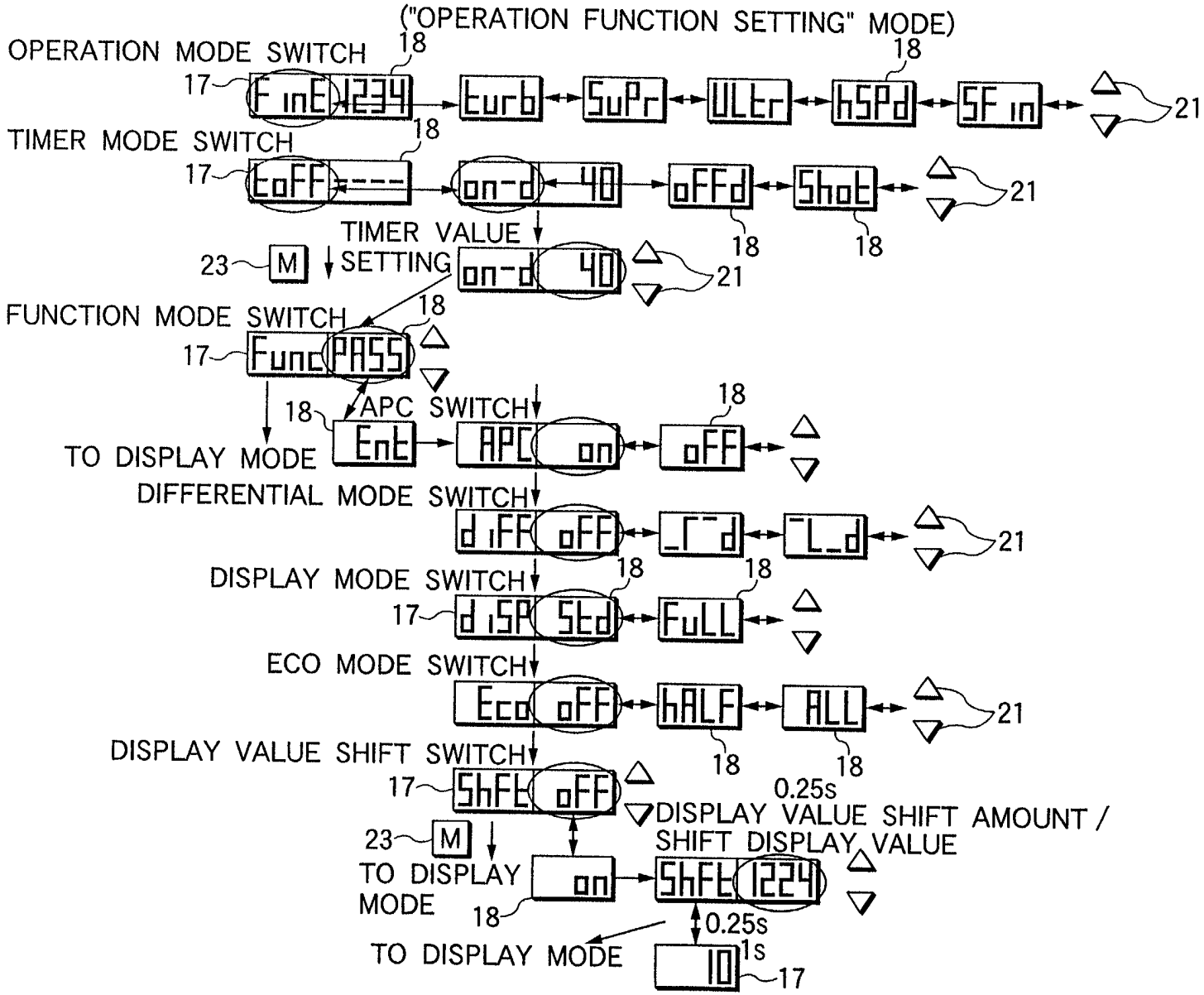
("OPERATION FUNCTION SETTING" MODE)
OPERATION MODE SWITCH
TIMER MODE SWITCH
TIMER VALUE SETTING
FUNCTION MODE SWITCH
APC SWITCH
TO DISPLAY MODE
DIFFERENTIAL MODE SWITCH
DISPLAY MODE SWITCH
ECO MODE SWITCH
DISPLAY VALUE SHIFT SWITCH
DISPLAY VALUE SHIFT AMOUNT / SHIFT DISPLAY VALUE
0.25s
1s
17
18
21
23
M

FIG.26

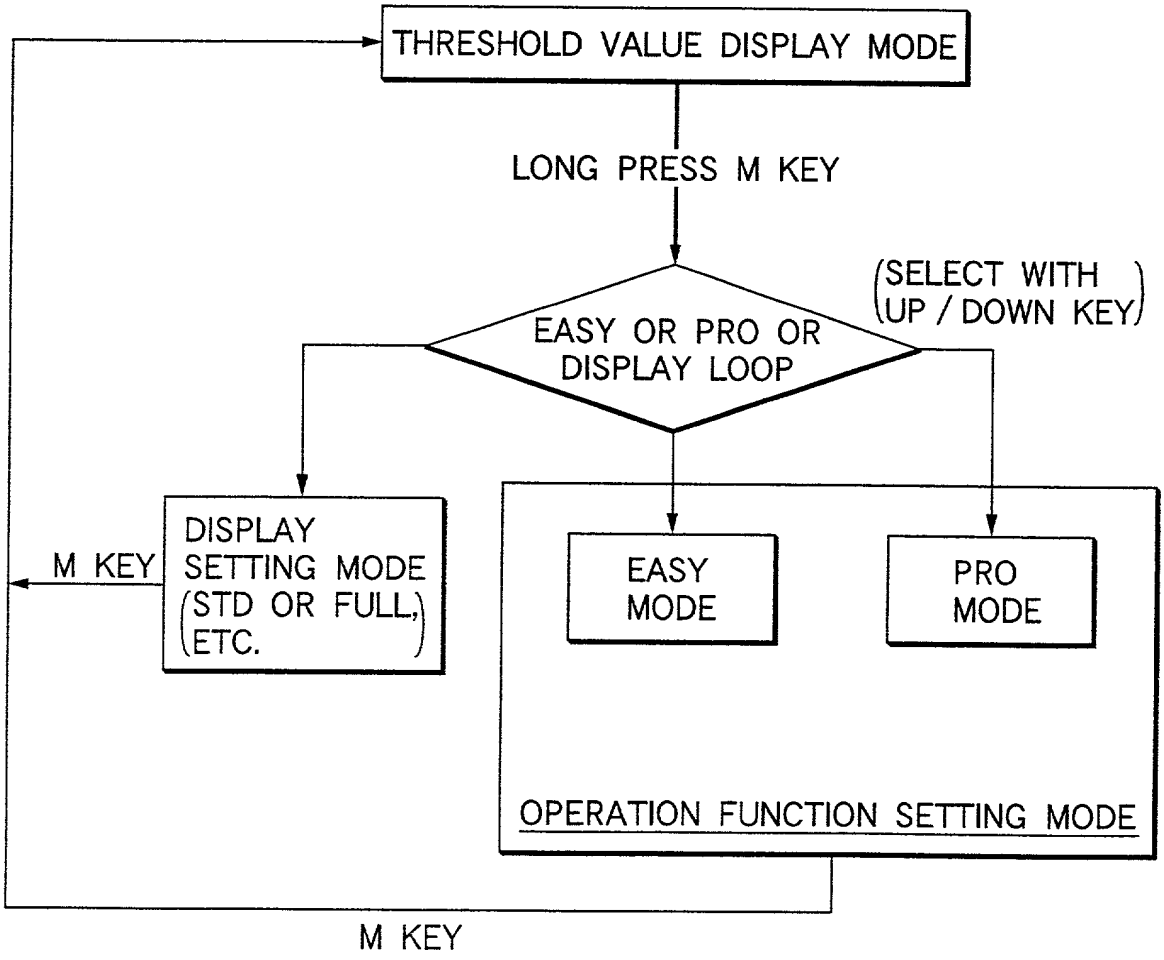
THRESHOLD VALUE DISPLAY MODE
LONG PRESS M KEY
(SELECT WITH UP / DOWN KEY)
EASY OR PRO OR DISPLAY LOOP
DISPLAY SETTING MODE (STD OR FULL, ETC.
M KEY
EASY MODE
PRO MODE
OPERATION FUNCTION SETTING MODE
M KEY

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FIG.27

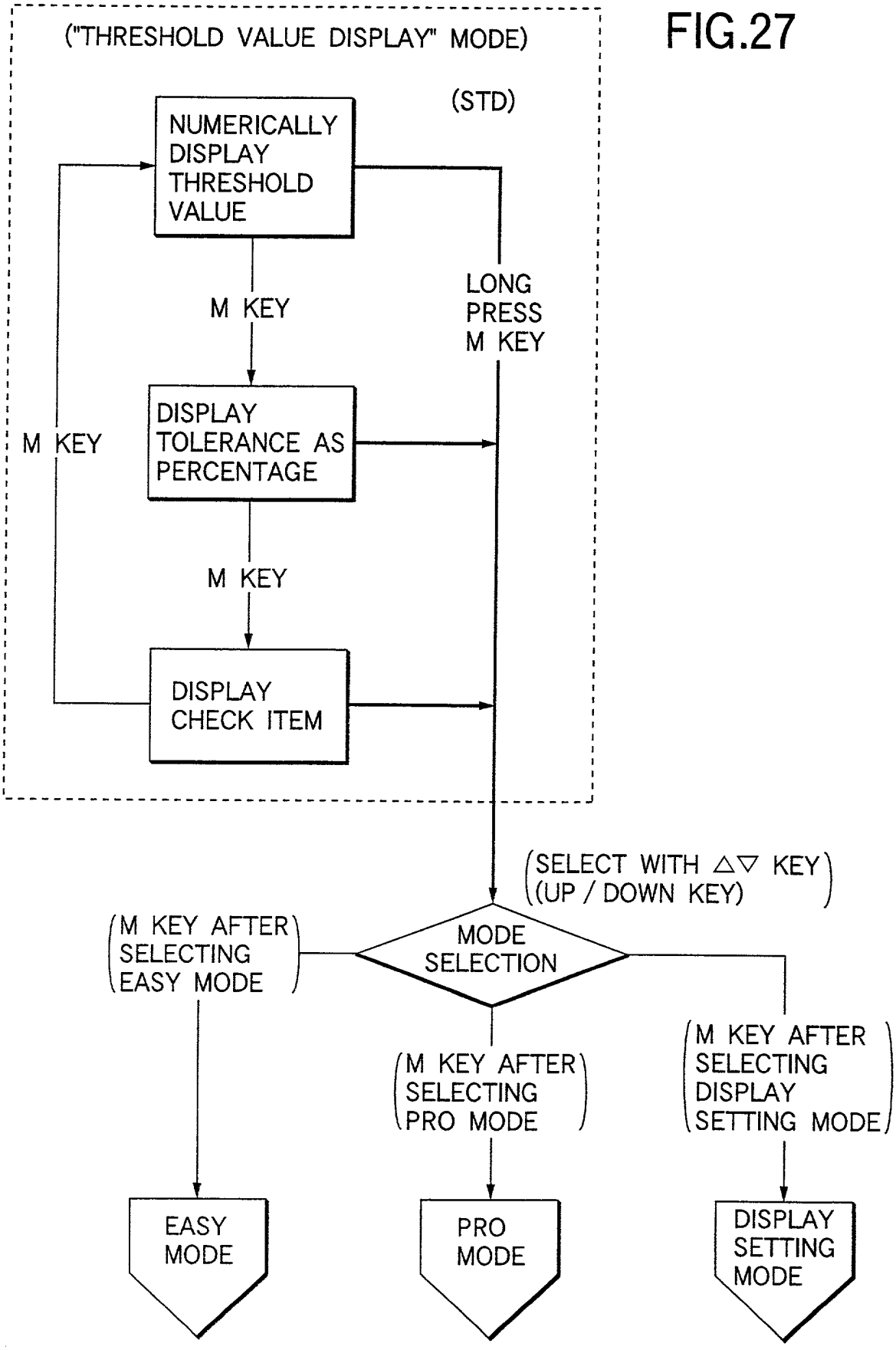

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FIG.28

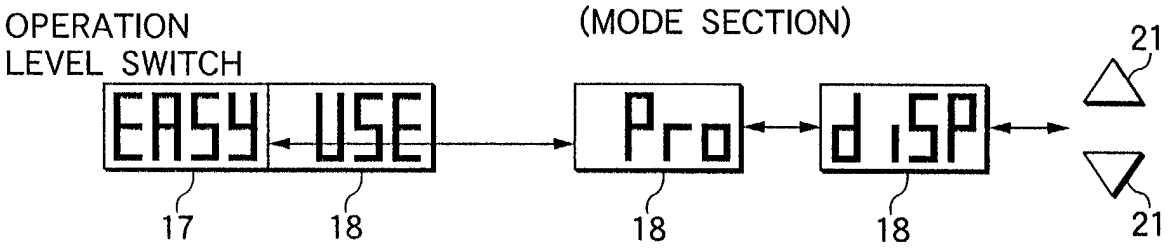

FIG.29

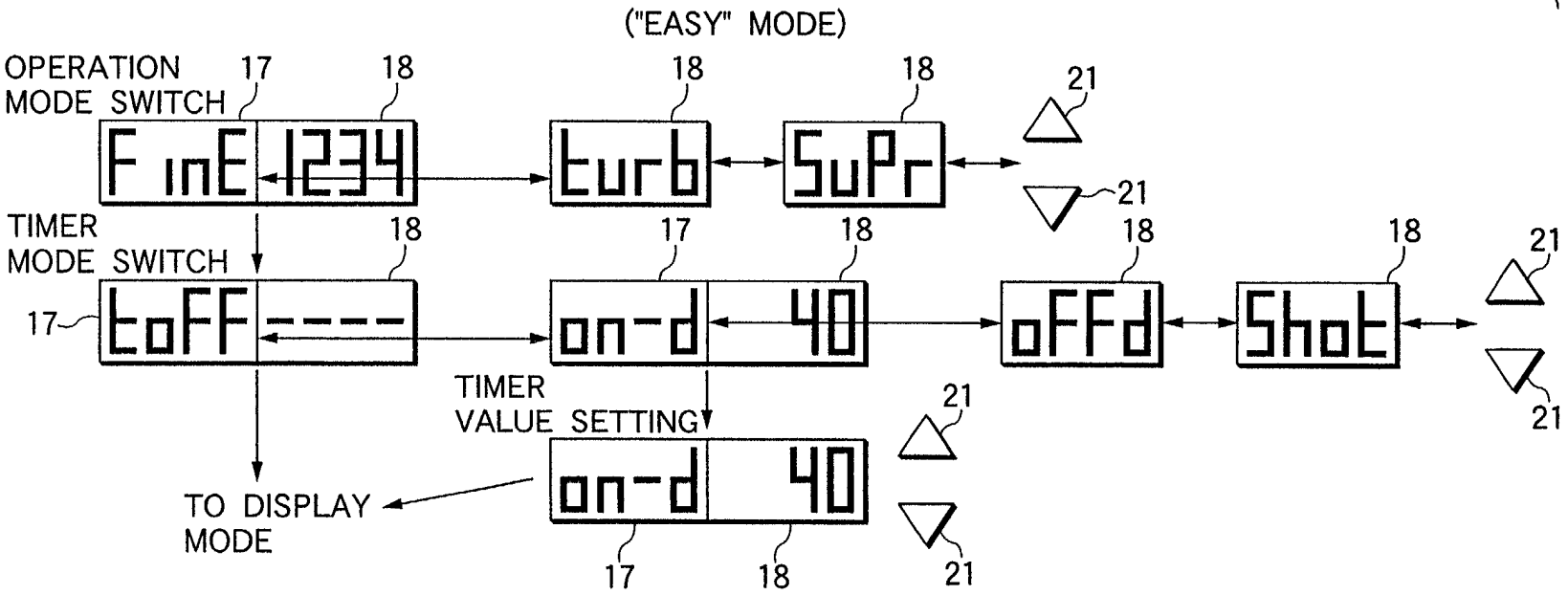

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FIG.30

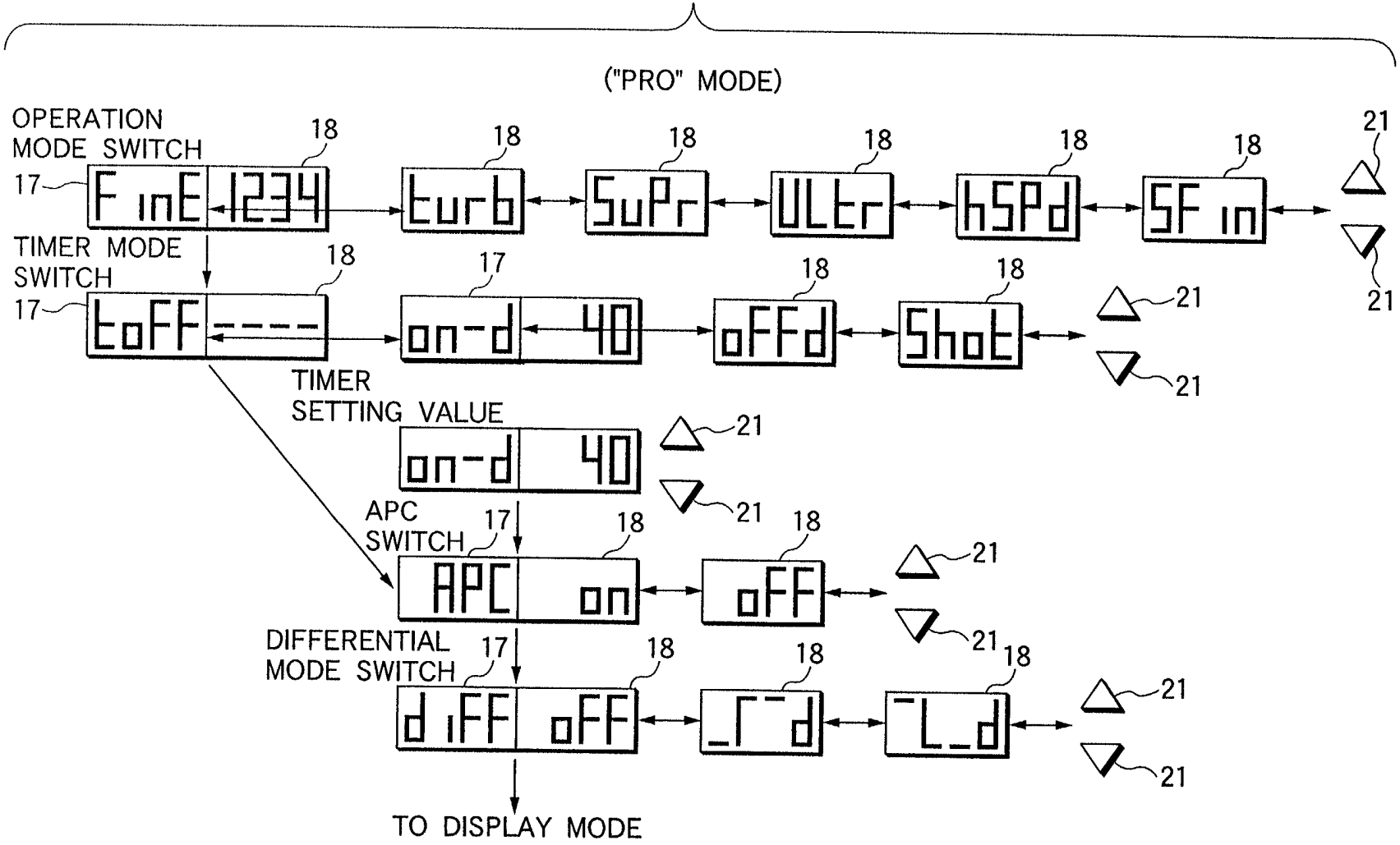
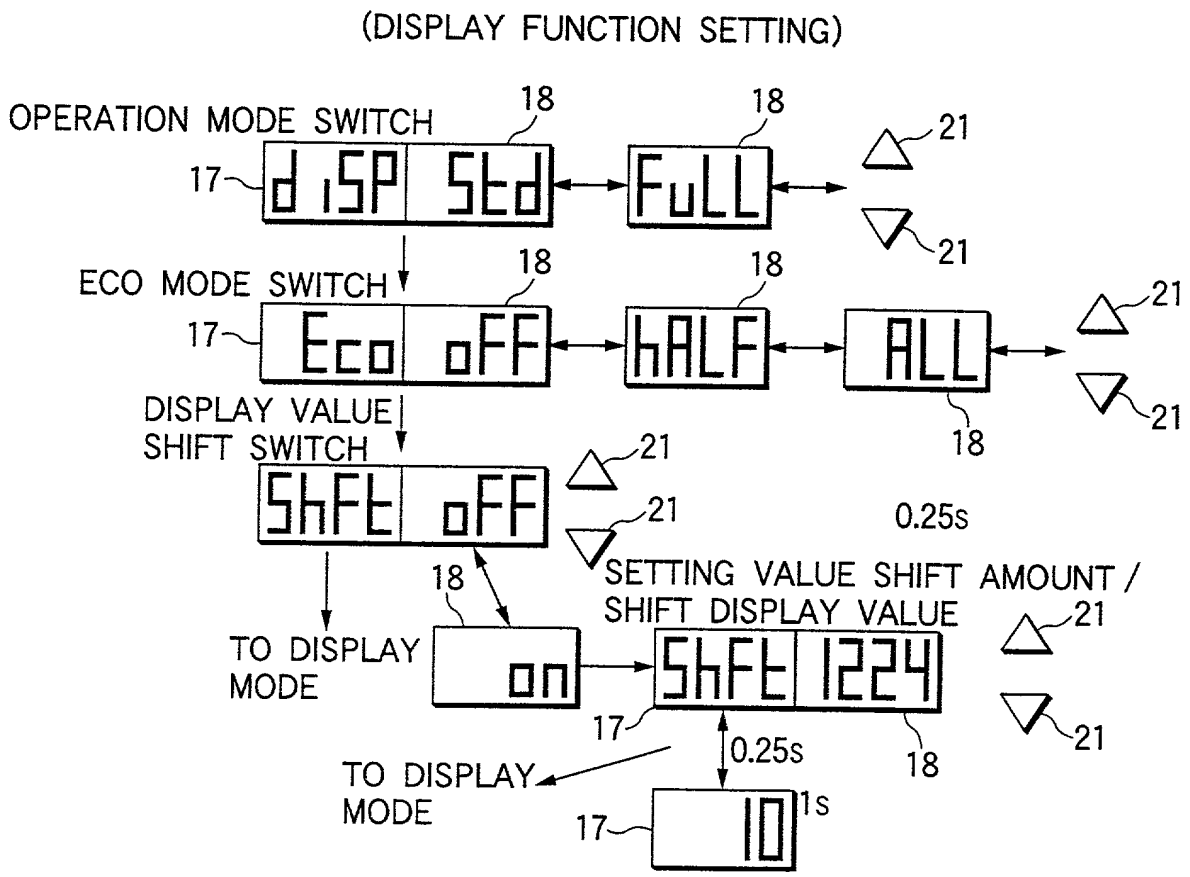


FIG.31


(DISPLAY FUNCTION SETTING)
OPERATION MODE SWITCH
18
18
21
17
d iSP
Std
FuLL
21
ECO MODE SWITCH
18
18
21
17
Eco
oFF
hALF
ALL
21
18
DISPLAY VALUE SHIFT SWITCH
21
ShFt
oFF
21
0.25s
18
SETTING VALUE SHIFT AMOUNT / SHIFT DISPLAY VALUE
21
TO DISPLAY MODE
on
ShFt
1224
17
21
0.25s
18
TO DISPLAY MODE
1s
17
10

20612D" 9E49Z00T

FIG.32

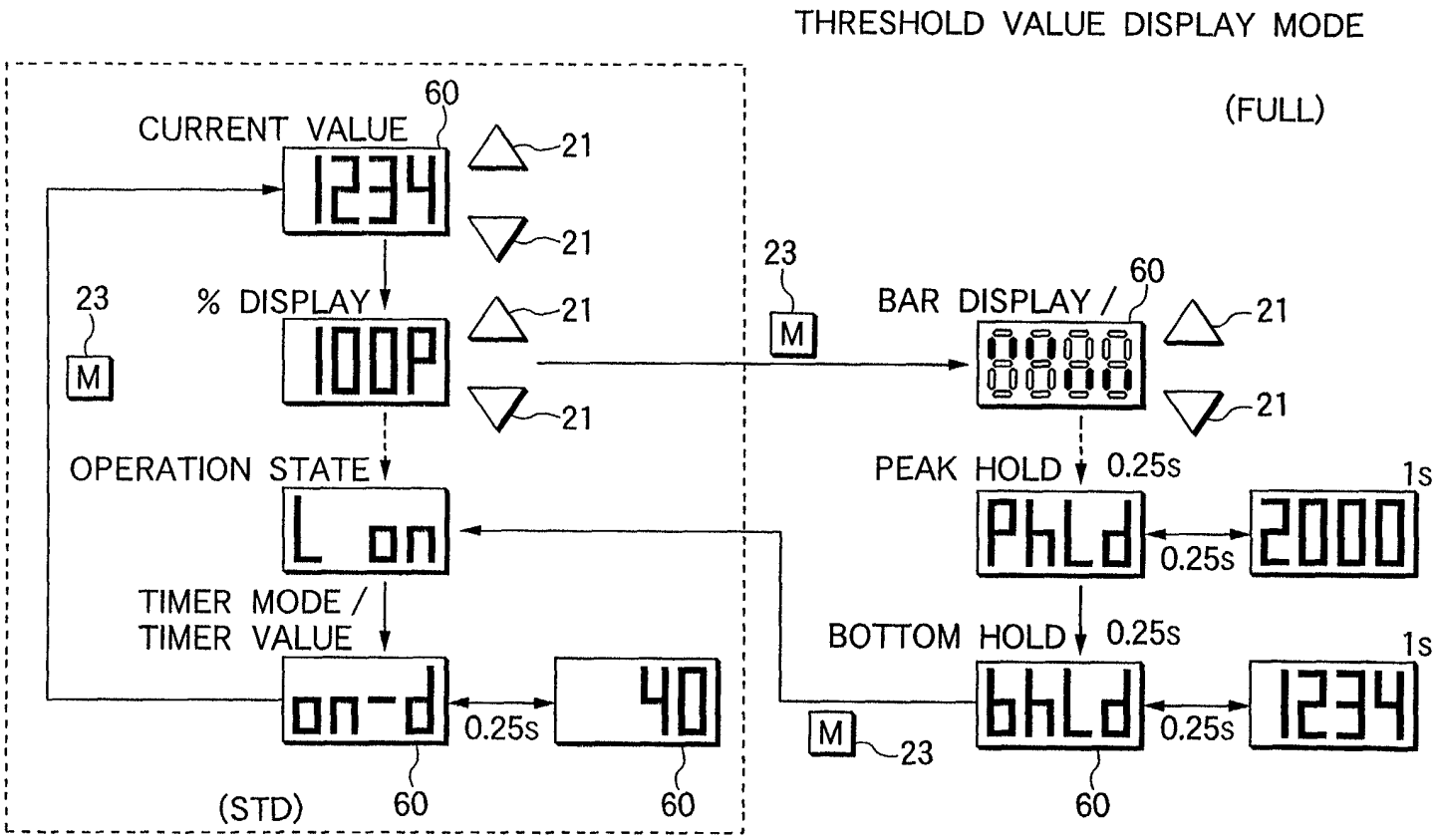


FIG.33

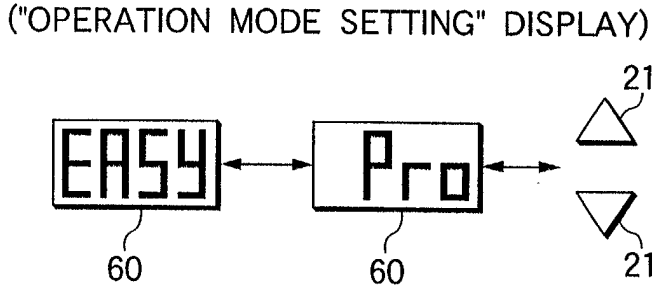

("OPERATION MODE SETTING" DISPLAY)
EASY
Pro
60
60
21
21

FIG.34

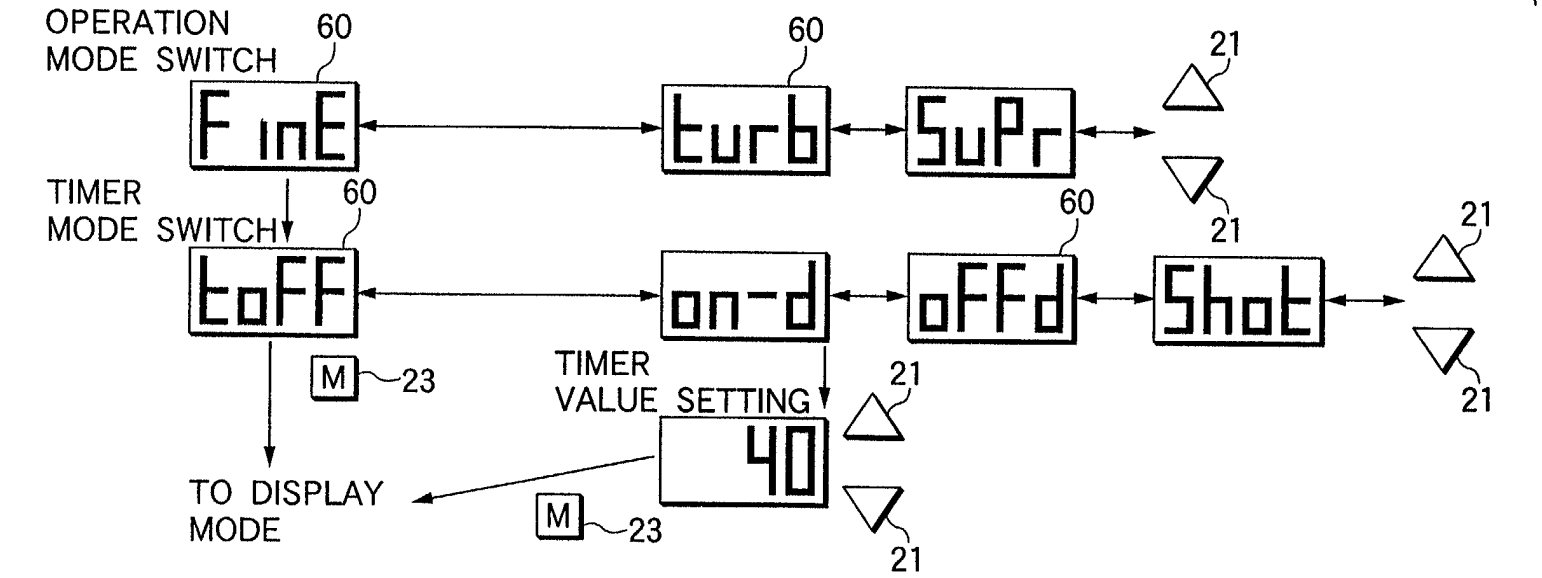

OPERATION MODE SWITCH
60
FinE
60
turb
SuPr
21
21
TIMER MODE SWITCH
60
toFF
60
on-d
oFFd
Shot
21
21
M
23
TIMER VALUE SETTING
21
40
TO DISPLAY MODE
M
23
21

FIG.35

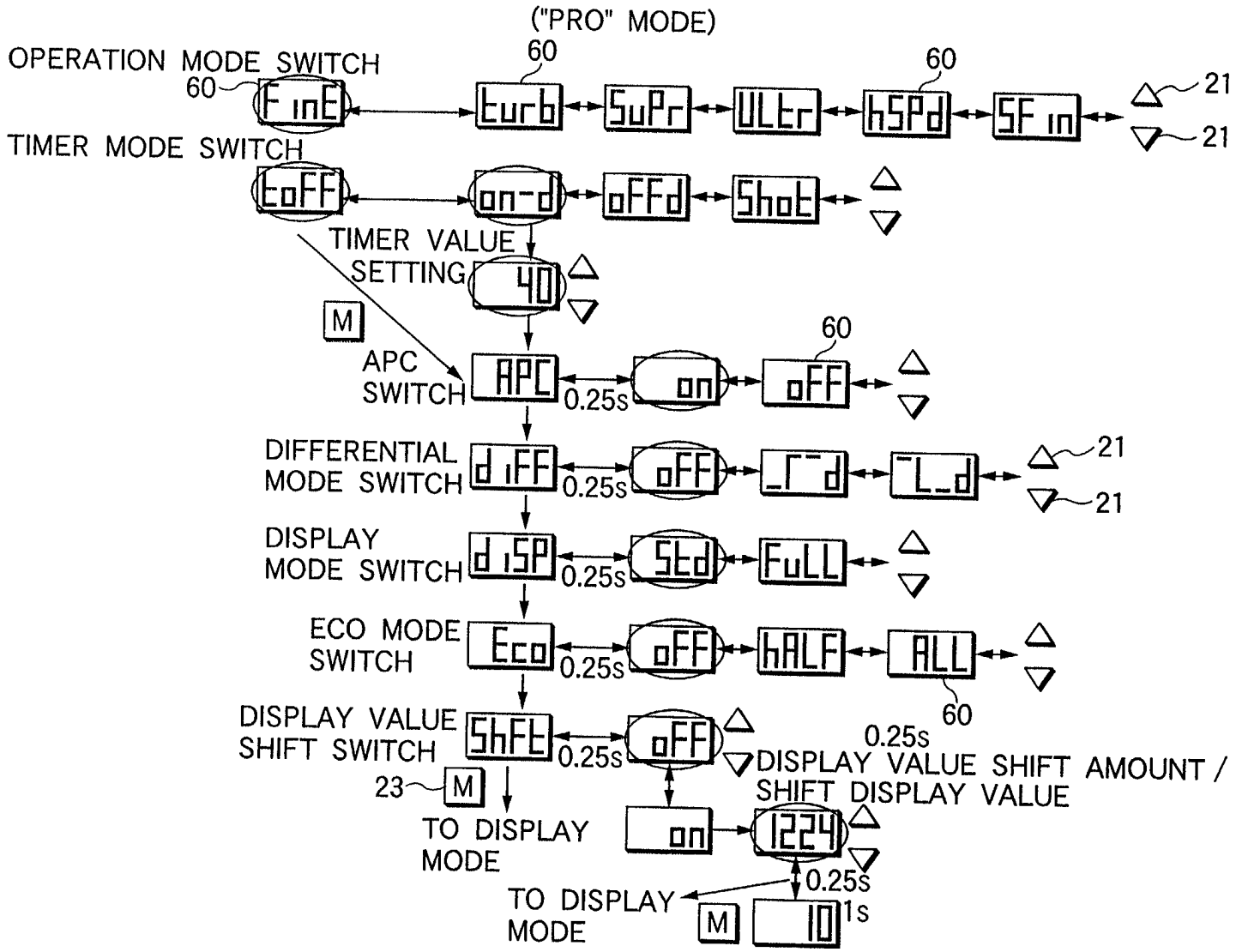

("PRO" MODE)
OPERATION MODE SWITCH
60
FinE
turb
SuPr
ULtr
hSPd
SF in
60
60
21
21
TIMER MODE SWITCH
toFF
on-d
oFFd
Shot
TIMER VALUE SETTING
40
M
APC SWITCH
APC
0.25s
on
oFF
60
DIFFERENTIAL MODE SWITCH
d iFF
0.25s
oFF
21
21
DISPLAY MODE SWITCH
d iSP
0.25s
Std
FuLL
ECO MODE SWITCH
Eco
0.25s
oFF
hALF
ALL
60
DISPLAY VALUE SHIFT SWITCH
ShFt
0.25s
oFF
0.25s
DISPLAY VALUE SHIFT AMOUNT / SHIFT DISPLAY VALUE
23
M
TO DISPLAY MODE
on
1224
0.25s
TO DISPLAY MODE
M
10
1s

FIG.36

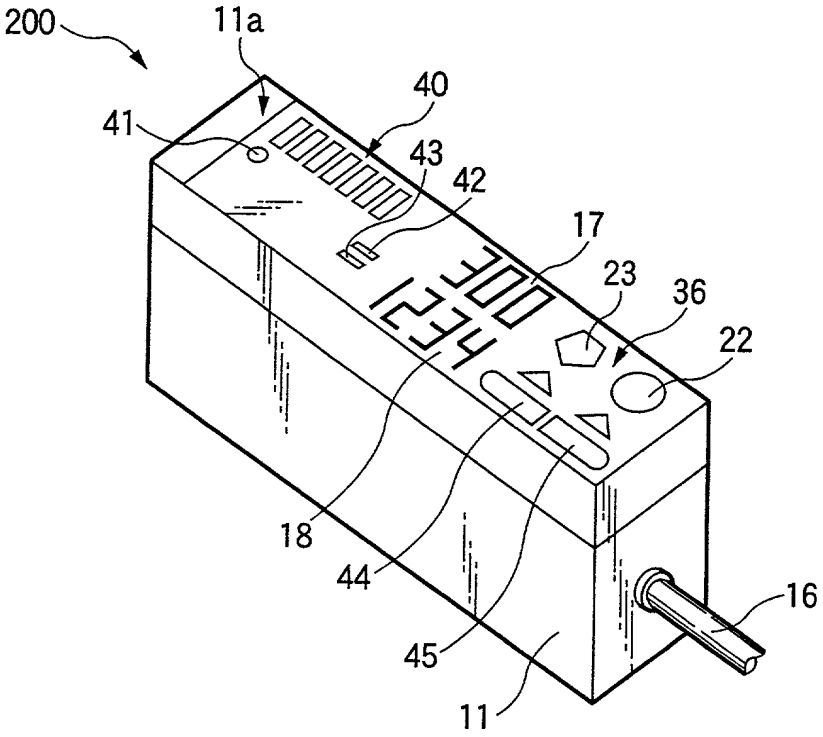
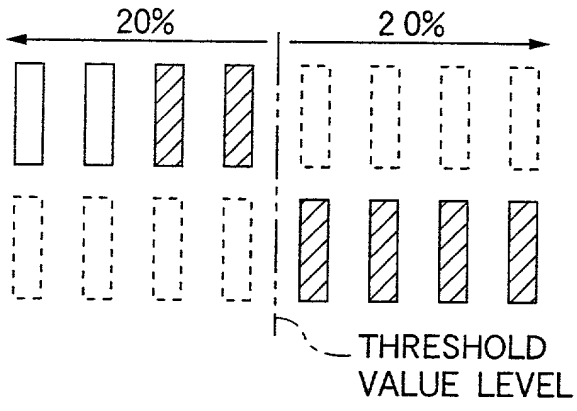
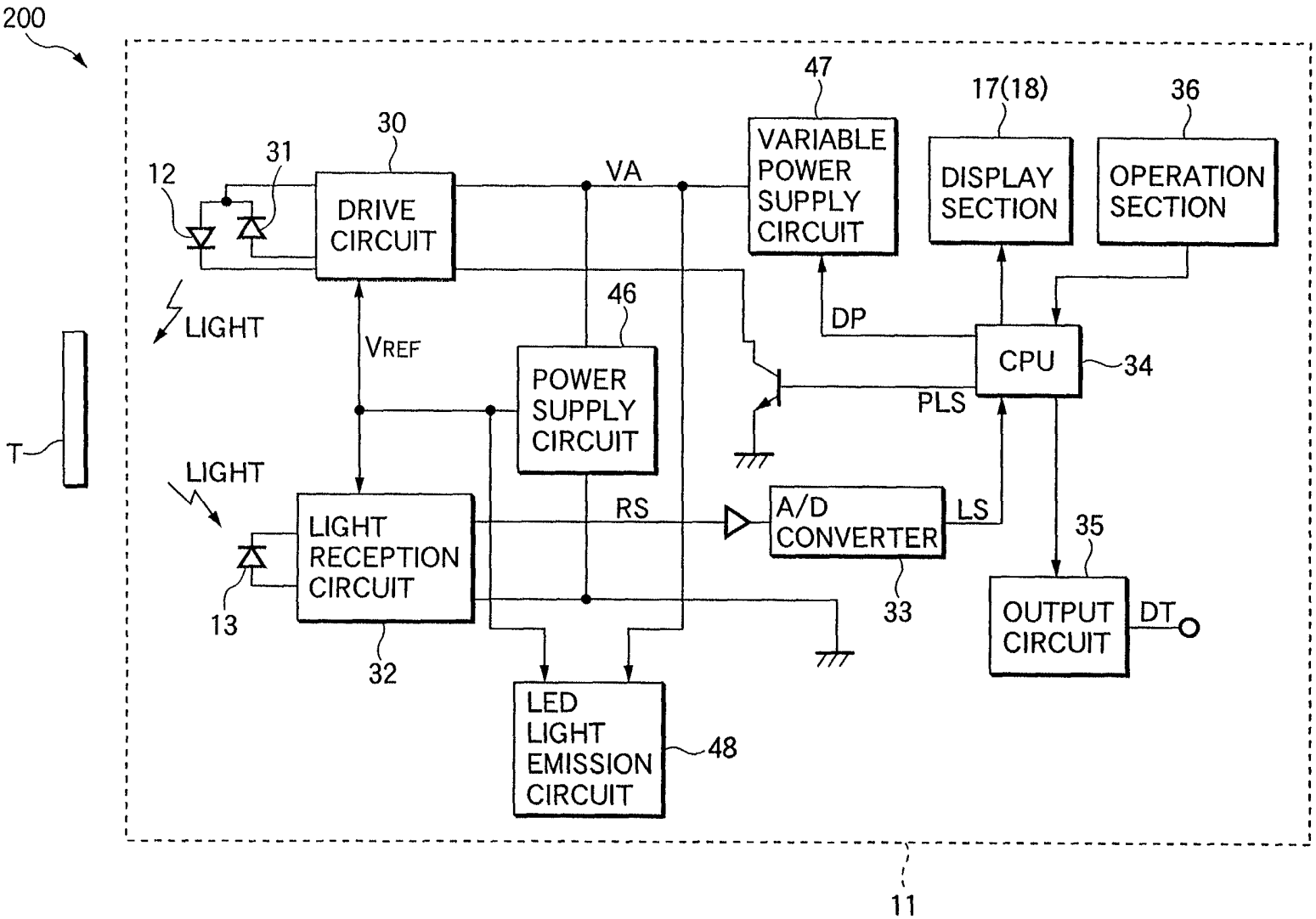

200
11a
40
41
43
42
17
23
36
22
18
44
45
16
11

FIG.37


20%
20%
THRESHOLD
VALUE LEVEL

2061201 9E49201

FIG.38



2006-12-20 95459204

FIG.39

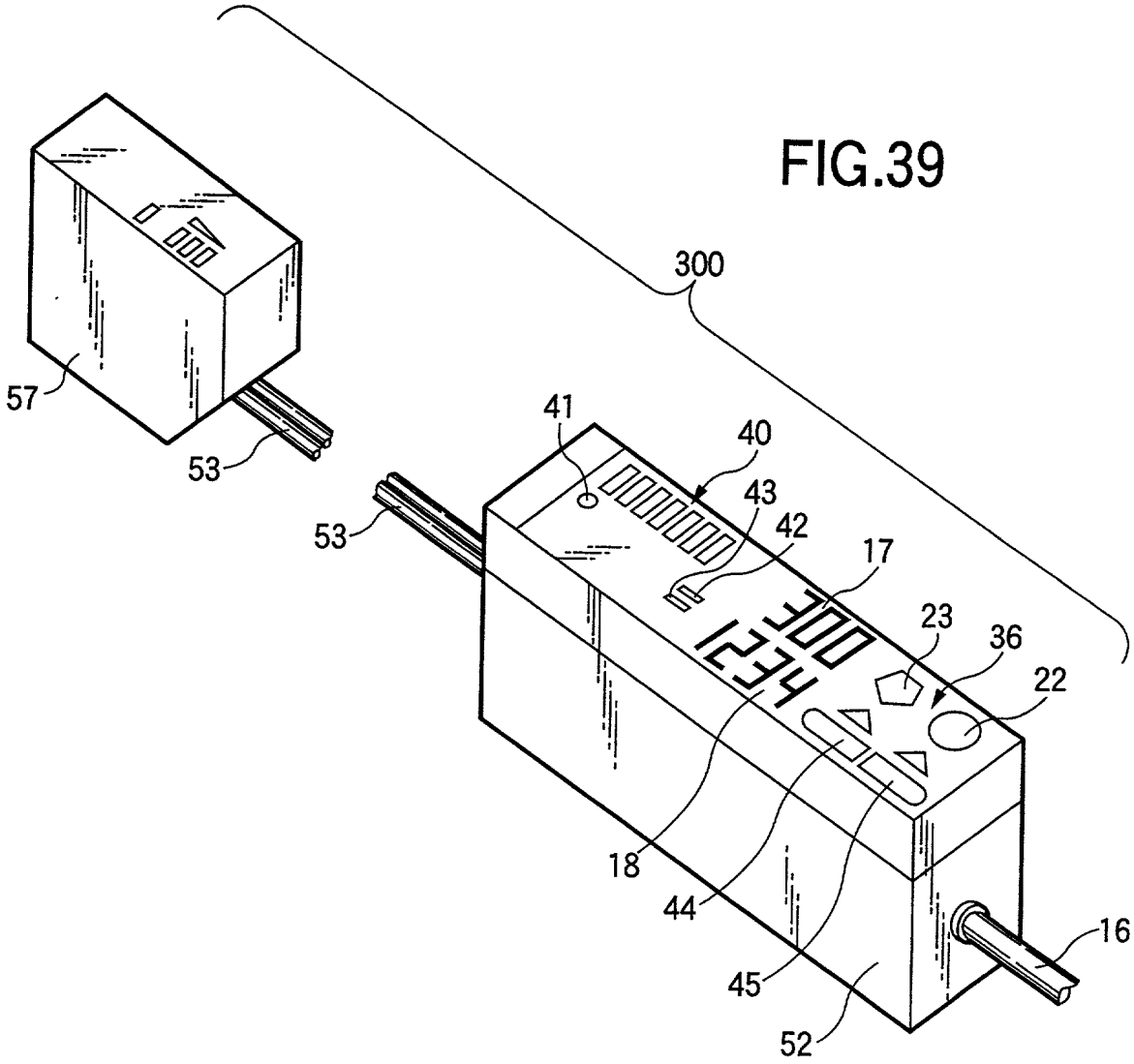
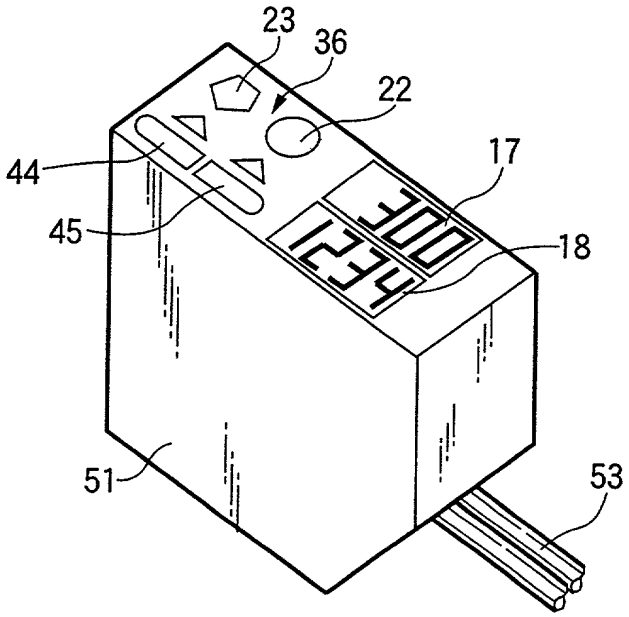



FIG.40